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AGRICULTURE

No. 102

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I. GENERAL INFORMATION

STORM, FLOOD DAMAGE IN PROVINCES REPORTED

OW300723 Hong Kong AFP in English 0656 GMT 30 Aug 80

'[Text] Beijing Aug. 29 (AFP)—Storms and flooding have left hundreds dead in China over the last few weeks.

Provincial press reports available here today said that the strong typhoon which struck the western part of Guangdong Province and Hainan Island in the Gulf of Tonkin in July killed altogether 251 people.

A mini tidal wave swept small parts of the seaside port of Zhanjiang, and the typhoon caused serious damage in the Leizhou Peninsula and the northern part of Hainan Island.

Meanwhile the army and population in Shanghai are on standby alert against flooding which is threatening several districts of the east Chinese metropolis.

A typhoon hit the city of 11 million people last night but so far it has been impossible to obtain estimates of damage.

Several provinces in central and south China were also badly hit by floods. Heavy rainfall and hail has fallen during the last few weeks over Jiangsu and Anhui provinces in the east and the central province of Hubei damaging some 3,300,000 hectares (8,151,000 acres) of harvests.

At the end of last month flooding had caused 53 deaths in the province of Anhui alone.

In Shaanxi Province 93 people were killed and 15 injured after rivers, swollen by heavy rainfall, overflowed.

In eastern Shandong Province, 50,000 houses collapsed or were badly damaged in a succession of hailstorms. The provincial radio said 40 people were hurt but did not mention any deaths.

In the central province of Hunan, flooding last month destroyed 60,000 houses and left nearly 100,000 people without shelter.

The provincial radio said two people had died in Jishou County but did not give overall figures for the province.

Meanwhile New China News Agency(NCNA) said today that heavy rainfall recorded between June and mid-August in the Changjiang River and Huai River basins was 40 percent to 100 percent above the seasonal average.

The Changjiang River which cuts the country from west to east and several of its tributaries rose above danger levels several times.

In the central city of Hankou the Changjiang was flowing two meters (6.5 feet) higher than levels recorded during the flooding of 1954, which was the worst in China this century, NCNA said.

On the other hand several regions in north China including Inner Mongolia and Hebei, the provinces surrounding Beijing, have been suffering from persistent drought conditions since the beginning of the summer.

The drought is affecting an area of 9,300,000 hectares (22,971,000 acres).

CSO: 4020

SUMMER WEATHER PATTERNS, CROP DAMAGE ASSESSED

OW291518 Beijing XINHUA in English 1500 GMT 29 Aug 80

[Text] Beijing, August 29 (XINHUA)--Many parts of southern China have had above-normal rain this summer, causing inundation in some areas, while Inner Mongolia, Hebei and other parts of northern China have been so short of rain that the crops have been seriously threatened, according to the central flood-prevention headquarters.

June to mid-August rainfall in the Yangtze and Huaihe River basins this year ranged between 500 and 1,100 millimeters, 40 to 100 per cent above normal for the period. In contrast, the weather in northern China has been hot and dry. In and around Inner Mongolia and Hebei, usually rainy July provided only to 10 to 40 millimeters of precipitation, 50 to 80 per cent less than average.

Most of the inundation reported by areas in southern China was caused by the accumulation of surface rain water or flash mountain torrents and only in limited areas, by flooding, according to the headquarters.

All China's major rivers--Yangtze, Yellow, Huaihe, Haihe, Pearl, Songhua and Liaohe rivers--have been safe this summer. But a number of Yangtze and Huaihe tributaries rose to danger levels. Except for the Yangtze, all are now below the warning line.

The middle course of the Yangtze River inched above the warning line on August 13 and has kept above it since. More rain has fallen and the middle and lower reaches of the river are now above the warning line. The water level at Hankou, where the biggest tributary the Hanshui joins the Yangtze, stood at 27.32 meters today, 1.02 meters above the warning line and 2.41 meters below the highest water level recorded. That was in 1954, when the biggest flood of the century occurred. More than 70,000 people are patrolling the dykes in Hubei Province along the river's middle reaches, inspecting the dykes and strengthening weak points.

Twelve hundred millimeters of rain was registered between May 30 and August 5 in the basin of the Lishui tributary that flows into Dongting Lake in Hunan Province, 2.4 times the normal amount for the period. Five heavy torrents occurred along the tributary and water levels in some places came close to or above the highest recorded in 30 years. A number of small dykes gave way, inundating low-lying areas along the lake.

The rains swelled a number of tributaries of the Yangtze and lakes in low-lying areas along the middle and lower reaches of the river such as Honghu and its nearby lakes in Hubei Province and Taihu Lake in Jiangsu Province. This made it difficult to drain off rain water into these tributaries and lakes and some low-lying areas were affected.

The drained fields in many areas are being fertilized and tended, while in the seriously affected areas, crops are being replanted.

Water control projects so far built have alleviated or prevented flooding and waterlogging. Following torrential rains, heavy flows of upwards of 20,000 cubic meters of water per second poured into Tanjiangkou reservoir on the Hanshui River on June 25 and again on August 25, threatening the safety of the lower reaches of the Hanshui River. Most of the water was safely impounded in the reservoir. It released only 1,000 to 7,000 cubic meters of water per second downstream, thus averting potential disasters. The Meishan and Foziling reservoirs sharply reduced the heavy flows of Huaihe River tributaries.

In general, the summer rainy season draws to a close in southern China in late August or early September while in northern China it ends in late September. But since the western Pacific subtropical high pressure is still lingering over the Yangtze and Huaihe River basins instead of moving north as usual, rainy weather is expected to continue for some days in the south and dry weather in the north.

CSO: 4020

GRAIN PRODUCTION FIGURES ANALYZED

Taipei FEI CHING YUEH PAO [CHINESE COMMUNIST AFFAIRS MONTHLY] in Chinese
Vol 22 No 12, 15 Jun 80 pp 44-50

[Article by Ch'en Po-wen [7115 0130 2429]: "The Chinese Communist Grain Problem"]

[Excerpts] Flaws in Grain Production and Marketing Figures

During 1980, the Chinese Communists revealed many figures about their grain production and marketing. The caliber of some of these figures is uneven and there are conflicts in their presentation, both of which help us understand the actual situation in mainland grain output and marketing. They are presented here sequentially to provide comparison.

(1) On 1 January 1980, the Chinese Communist RENMIN RIBAO disclosed that the amount of grain produced and marketed on the mainland during 1979 amounted to 630 billion jin (315 million tons), an increase of 3.4 percent over 1978.

(2) On 8 April 1980, the Chinese Communist State Planning Commission's deputy director, Li Renjun [2621 0086 0193] said in a report to the 14th session of the Standing Committee of the Fifth "National People's Congress" titled "Report on the Implementation of the National Economic Plan During 1979 and Arrangements for the 1980 National Economic Plan" that grain production on the mainland during 1979 amounted to 324 million tons, an increase over the previous year of 15.1 million tons, i.e. an increase of 4.9 percent.[3]

(3) On 30 April 1980, the Chinese Communist "State Statistical Bureau" published the "Communique on Results of the Implementation of the 1979 National Economic Plan," which said that mainland grain output in 1979 was 332.1 million tons, an increase of 9 percent over the previous year.[4]

(4) The December 1979 issue of the Beijing issue of JINGJI YANJIU [ECONOMIC RESEARCH] revealed that during the 21-year period from 1957 to 1978, the average annual increase in mainland grain output was 2.15 percent.

During this 21 year period, average per capita output of grain, edible vegetable oil, and cotton not only showed no increase, but rather a decrease. Grain decreased by 3.2 percent; vegetable oil decreased by 33.3 percent; and cotton decreased by 2 percent.[5]

(5) The 1980 fifth issue of HONGQI [RED FLAG] magazine disclosed that total grain output on the mainland during 1960 was only 287 billion jin (160 million tons), 400 million jin less than in 1951. Total grain output in 1962 was 320 billion jin (160 million tons), a decline of 70.1 billion jin or a 18 percent reduction in output from 1957.[6]

(6) The January 1980 issue of the Beijing JINGJI YANJIU monthly disclosed that "between 1957 and 1977, our country's grain production increased by 175.4 billion jin, while population increase for the same period was 299 million. In 1977, grain output per capita was only 598 jin, 5 jin less than in 1957.[7]

(7) The February issue of the Beijing JINGJI YANJIU monthly disclosed that "in 1962, grain output was 20 percent less than in 1958." It also reported that "in 1978, average per mu yields of grain nationwide were 337 jin, and annual output of grain for each agricultural worker was only 1899 jin, or an average of only 636 jin for every person in the country... during the past 20 years, grain, cotton and oil production did not exceed 1957 levels."[8]

(8) HONGQI's fifth issue in 1980 also disclosed that during the 5 year period from 1966 to 1974, [as published] the average annual increase in grain output was 4.5 percent."[9]

a comparison of the data cited in items (1), (2), and (3) above shows that the figures contain numerous questions, of which the disparity in grain production figures for 1979 are shown in the following table.

Source	Figures disclosed in 1 January RENMIN RIBAO	Figures in Li Renjun 8 April report	30 April statistical communique figures
Total grain output	315 million tons	324.9 million tons	332.115 million tons
Increase in grain output	10.25 million tons	15.1 million tons	27.365 million tons
Rate of increase in grain output	3.4 percent	4.9 percent	9 percent

As the table shows, within the space of 4 months, the Chinese Communists surprisingly issued three different sets of figures for their total 1979 grain output. The difference between the 1 January and the 30 April figures

amounts to 17.115 million tons, and the difference in the rate of increase is 5.5 percent [as published]. This is statistical phenomenon rarely seen. If one argues that the grain output put statistics of 1 January were not the final figures collected, then the 8 April and 30 April ones, which were only 20-odd days apart should be the same, but in actual fact there was a tremendous difference in them.

Li Renjun's figures for total grain output in 1979 of 324.9 million tons were less by 7.215 million tons than the 332.115 million tons given in the published "Communique." Moreover, Li Renjun said that total grain output during 1979 showed an increase of 15.1 million tons over the previous year. Calculating on this basis, the total grain output for 1978 must have been 309.8 million tons. But in 1978, a report from the Chinese Communist "State Statistical Bureau" showed total grain production to be 304.7 million tons. There is a disparity of 5.05 million tons between the two, i.e. Li Renjun's 1978 total grain production figures are 5.05 million tons "greater" than the total figures for 1978 given by the economic Communique. Furthermore, that the Chinese Communist's supreme economic planning and statistical organization has surprisingly conflicting figures with discrepancies as tremendous as this, naturally belittles the degree of reliability of Chinese Communist grain production figures.

Particularly deserving of note is the "Communique's" announcement that the 1979 rate of grain increase amounted to 9 percent. Such a high rate of increase was not even attained by the Chinese Communists during the period of the First Five Year Plan when the situation in agricultural production was fairly normal, so how could a 9 percent increase occur in 1979 when the mainland was fairly seriously hit with natural disasters? (During the five year period of the First Five Year Plan, the average rate of grain increase was only 3.7 percent). The Chinese Communists themselves announced that during March and April of 1979, a serious freeze of "reverse spring cold" took place. During the first half year, 11 provinces sustained droughts, and during the last half of the year nine provinces and one municipality were without rain continuously for 3 months. Additionally, some regions suffered floods. This shows that 1979 was by no means a good year for crops with favorable winds and regular rains. How could there have been a rate of increase as high as 9 percent? It is only the grain production figures from the Chinese Communist "State Statistical Bureau" that merit suspicion.

The item (4) data reveals conflicts in two places. The Chinese Communists claim that during the 21 years between 1957 and 1978 there was an average annual progressive increase in grain production of 2.15 percent. Extrapolating from this figure, mainland grain production in 1978 must have shown an increase of 56.32 percent over 1957, and total grain production must have been 289.18 million tons. But the figures given for grain production in the 1978 Chinese Communist "Communique" were 304.75 million tons. If the data in the previous items was correct, then the 1978

Chinese Communist "Communique" overstated grain production by 15.560 million tons. Secondly, the Chinese Communists announced figure for 1978 of average per capita grain production as 318 kilograms is too much by 28 kilograms. If calculations are made on the basis of the 1978 average annual per capita grain production of 281.5 jin for the combined population, than total grain production on the mainland that year must have been 269.7 million tons, which amounts to a discrepancy of 35.05 million tons from the 304.75 million tons published in the Chinese Communist "Communique". That the discrepancy for a single year's grain production is so large is mind boggling in the extreme.

The item (5) data is from an announcement in the Chinese Communist HONGQI magazine that in 1960 total mainland grain production was 143.5 million tons, and in 1962 was 160 million tons. This was the first time that the Chinese Communists had published their 1960 grain figures in an official publication, and it was also the first admission that during the 1960 famine period total grain production was lower than the 150 million ton figure. Last year, this writer exposed the Chinese Communist propagandized grain figures in an article that was published in Issue 1, Volume 1 of TALU CHINGCHI YENCHIU [MAINLAND ECONOMIC RESEARCH]. It was estimated that the 1960 mainland grain production was 145 million tons and that 1962 production was 159.6 million tons, which was quite close to the figures that the Chinese Communists have now revealed. Nevertheless, the grain figures that the Chinese Communists have revealed still have many points of conflict. For example, the so-called 1960 grain output of 143.5 million tons, which was less than the 1951 output by 400 million jin (200,000 tons), is the equivalent of saying that 1951 grain production was 143.7 million tons, when, in fact, the Chinese Communist "State Statistical Bureau" had earlier announced the 1951 grain production as being only 135 million tons. This is the first point of conflict. They also said that 1962 grain production was 160 million tons, a decline of 70.1 billion jin (35.05 million tons) from 1957, or a 18 percent reduction in production. On the basis of these calculations, the 1957 grain output must have been 195.05 million tons. But the Chinese Communist "State Statistical Bureau" earlier announced 1957 grain production as being 185 million tons. This is the second point of conflict. Again there is the so-called 1962 grain production, which showed a decline of 70.1 billion jin decline from 1957 or an 18 percent reduction in production. If 70.1 billion jin is the equivalent of 18 percent, then the grainproduction in 1957 must have been 194.72 tons and not 195.05 million tons. This is point of conflict number three.

The item (6) data has the so-called increase in grain production by 175.4 billion jin (87.7 million tons) between 1957 and 1977. By these calculations grain production in 1977 must have been 272.7 million tons, but the Chinese Communists announced the figure 282.75 million tons. The so-called 1977 per capita grain production figure of 598 jin, which was 5 jin less than in 1957, shows that in 1957, the average per capita grain output must have been 603 jin. But the Chinese Communists had earlier announced

1957 grain output as averaging 582 jin per capita and not 603 jin. Further, according to Chinese Communist reported grain output figures and per capita figures for 1977, the average per capita grain production must have been 606 jin and not 598 jin. These are all unpardonably conflicting figures.

The item (7) data is the so-called average annual increase in grain output of 4.5 percent during the 5-year period, 1966-1974. [sic] This amounts to saying that grain production in 1974 increased 15.25 percent over 1966. Considering the Chinese Communist reported grain production for 1974 as being 240 million tons, the 1966 grain production can be extrapolated to 201.255 million tons.

In summary, the above shows that Chinese Communist grain production figures are extremely confused, yet various new figures can be deduced from them that help our understanding of the realities of grain production on the mainland. A comparative table follows:

Units: Millions of tons

Year	Chicom Originally Reported Grain Production	Derived Grain Production from Relevant Figures
1951	135.0	143.7
1957	185.0	195.05
1958	250.0	200.0
1960		143.5
1962		160.0
1966		201.255
1976		276.44
1977	282.75	272.70
1978	304.75	289.185

Explanatory Notes

3. RENMIN RIBAO, 9 Apr 1980, p 1, Report by Li Renjun to the 14th Session of the Standing Committee of the Fifth "National People's Congress"

4. RENMIN RIBAO, 1 May 1980, p 2, Communique on Accomplishments in the Implementation of the National Economic Plan for 1979.

5. Beijing JINGJI YANJIU, [ECONOMIC RESEARCH] December 1979, p 37, "Socialist Construction Must Still Respect the Rule That Agriculture Is the Foundation"

6. HONGQI, Issue 5, 1980, p 29, "A Little Knowledge About Problems in Our Country's Agricultural Production Programs"

7. Beijing JINGJI YANJIU, January 1980, p 51, "On Several Problems in the Worker-Peasant Alliance"

8. Beijing JINGJI YANJIU, February 1980, p 12 & 14, "Increase the Effectiveness of the Use of Public Funds For the Support of Agriculture."

9. Same as 2.

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REGIONAL CONTROL IN AGRICULTURE DISCUSSED

HK0811154 Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 7, 15 Jul 80 pp 19-20

[Article by Su Rutu [5685 1172 0956]: "Speed Up Development of Agriculture and Animal Husbandry by Practicing Regional Control and Systematic Guidance"]

[Text] Since the third plenary session of the party Central Committee, we have seriously summarized both positive and negative experiences and lessons in the production of agriculture and animal husbandry, readjusted the overall arrangement of production in a rational manner, practiced regional control and systematic guidance and promoted the development of the production of agriculture and animal husbandry.

Urad Qianqi is situated in the eastern part of Bayannur Meng in Nei Monggol; it extends over a vast territory, has abundant resources and complicated natural and geographical conditions which vary greatly from place to place. Here, 2,317 square km of the whole territory or 31 percent of the total area is a stretch of Hetao plain irrigated by water diverted from the Huanghe River, 1,190 square km or 16 percent of the total area is taken up by undulating hills while 3,993 square km or 53 percent of the total area is covered by natural prairie which has plenty of water and lush grass. As a result of different geographical conditions, climates of the various regions are not exactly the same. The frost-free period varies from a maximum of 135 days to a minimum of 90 days while annual rainfall varies from a maximum of over 250 millimeters to a minimum of 190 millimeters in different places. The hours of sunshine are relatively long and the diurnal temperature range is great. As far as conditions of water conservancy are concerned, the area irrigated by water from the great bend of the Huanghe River has superior irrigation conditions because a crisscross network of irrigation channels covers the whole area, the topography of which is flat; however, for a long period, the problem of irrigation without drainage or irrigation without adequate drainage has not been solved properly. Moreover, in recent years several big drainage canals excavated in the Hetao region have converged in Qianqi; as a result, water table has risen while soil

salinization is becoming more and more serious and over 60 percent of the arable land has turned into saline-alkali land. In the hilly region, there are numerous hills and steep slopes. Here, the climate is cold and dry with little rain. In recent years, water conservancy work such as sinking motor-pumped wells, harnessing underground streams, building reservoirs and so on have been extensively carried out; the area of irrigated land keeps on expanding and already accounts for 35 percent of the arable land. As far as managment practice is concerned, the main economic regions of the agricultural zone, mixed farming zone and animal husbandry zone have taken shape in the course of a long historical evolution. However, the idea of uniformity has for many years been adopted as the guiding principle for the production of agriculture and animal husbandry in disregard of the concrete conditions and such factors as geographical conditions, climatic conditions, soil, water, manure and so on. "A very narrow scope and extremely tight restrictions" were imposed on the development of agricultural production; "taking grain as the key link" was lopsidedly stressed and many forms of operation had to be reduced. In the pastoral area, the call of "herdsmen will not take grain that troubles their conscience" was wrongly raised. Because of the call, wasteland was opened up for farming, pastoral areas became sandy wastes and the production of animal husbandry, forestry, sideline products and fishery were seriously slashed or rejected. As a result, natural and economic laws were violated, leading to serious dislocation of the internal proportions and relations in agriculture, disrupting the ecological balance, bringing about harmful results to economic construction and slowing down the development of grain production. The rural economy stagnated and the livelihood of the peasants did not improve any faster.

Since the party shifted its emphasis in work, we have gone deep into reality, made investigations and research, seriously summarized experiences and lessons and further realized that the production of agriculture and animal husbandry have their own objective laws and are strongly affected by regional and seasonal factors. Different regions have different conditions regarding soil, climate and so on, while different crops have different requirements with respect to farming, cultivation, management and so on at a give period within the same region. Therefore, in order to speed up the development of production in agriculture and animal husbandry, it is necessary to suit measures to local conditions, utilize favorable factors and avert harmful factors, overcome drawbacks by developing the strong points as well as practice regional control and systematic guidance. In conformity with this spirit, we have fixed the direction of creating conditions for achieving step by step a transition from the existing mixed farming to an all-round development in agriculture, forestry and animal husbandry but with the emphasis on animal husbandry.

As far as distribution of production is concerned, the whole banner has been divided into four zones in which initial success has been attained in developing animal husbandry, agriculture and forestry in the most suitable

areas. The region irrigated by water diverted from the Huanghe River (the Huanghe irrigation area): this region covers the 10 communes of Shulinzi, Zhangsheng, Xianfeng and so on. In line with the special features of this region, namely few irrigation problems, excellent soil conditions and being an ideal place for the growth of agricultural products, it has been decided that a harmonious development of agriculture, animal husbandry and forestry with an emphasis on agriculture will be carried out here. Well irrigation region: this region covers the two communes of Da Shetai and Sudulun. In line with the special features of this region, namely flat and regular terrain, abundant manure and plentiful sources of underground water, the region has been fixed as a zone for cereal crop farming as well as for all-round development of agriculture, animal husbandry and forestry. Nonirrigated hilly region: this region covers the three communes of Ming An, Zhaoyang and Xiao Shetai. In line with the special features of this region, namely aridity, lack of water and extensive stretches of prairie, it has been decided to develop this area step by step from a mixed farming zone into an area mainly for animal husbandry. Hilly pastoral region: this region covers the five communes of Baiyanhua, Jinxing and so on. It has a vast territory and is suitable for both animal husbandry and forestry. The zone has therefore been fixed as an area for the integrated development of animal husbandry and forestry, but with the emphasis on animal husbandry.

As far as distribution of crops is concerned, readjustments have been made in the planting programs in line with the different natural characteristics in each of the regions. The Huanghe irrigation region: the base for producing grain, sugar and oil with wheat as the main crop. The area for growing cash crops such as Chinese sorghum, beetroot, sunflower and so on has been expanded. Well irrigation region: the base for growing grain with wheat and Chinese sorghum as the main crops. Nonirrigated hilly region: the base for oil-bearing crops, Chinese yams and livestock produce, with wheat, millet, Chinese yams and rapeseed as the main crops. Hilly pastoral region: the base for livestock produce; rearing wild goats and sheep is the main activity on both sides of Mount Ula, while rearing beef-cattle is the main development in Ulansuhai Nur.

As far as changing the conditions of production is concerned, different strategies and guiding principles of control have been adopted in different regions. In the Huanghe irrigation region, in order to permanently get rid of soil salinity, improve the condition of the soil and solve the problems of "excessive alkali, insufficient manure and lack of flat ground," it has been decided to adopt the policy of tackling these problems in a comprehensive way by applying the methods of well and channel irrigation, well and ditch drainage, rotation of crops, flattening the ground, reducing the size of plots as well as controlling the utilization of water. In the well irrigation region and the nonirrigated hilly region, it is necessary to excavate the sources of underground water by all possible means, expand the area of irrigated land and improve the

water utilization rate. In the hilly pastoral region, the main task is to build fodder stores and water conveyance systems so as to establish step by step basic pasturelands which have readily available supplies of water, fodder, forest products and feed.

In order to gradually readjust the distribution of agriculture, animal husbandry and forestry so that the whole banner can gradually develop towards the direction of putting animal husbandry in a dominant position, the areas where the conditions are ripe have been made to switch from agriculture to animal husbandry as their principal means of production. In 1979 the arable land was reduced by over 40,000 mu which have since been converted back into pasture land; two agricultural production teams were converted into animal husbandry teams and the more than 150 peasant families of Jinxing Commune have been resettled in scattered groups so that they can give up farming and revert to animal husbandry.

The approach of dividing the whole banner into different zones and offering systematic guidance according to specific conditions that we adopted in the guiding principles for the production of agriculture and animal husbandry has been greatly welcomed by cadres at the basic level and by the broad masses. This approach has helped us to avoid vague, general and impractical directions, grasp each link in the production of agriculture and animal husbandry at the right opportunity, utilize all resources effectively, enhance labor productivity and foster the development of the production of agriculture and animal husbandry. In 1979, despite the occurrence of various natural calamities, good harvests were achieved by people of the various tribes throughout the banner after they made joint efforts to overcome the calamities. All-round development was achieved in agriculture, animal husbandry and sideline produce, production of grain, sugar, oil and livestock were all increased, bumper harvests were achieved by all communes in the rural and pastoral areas, while cadres and the masses were full of joy. Total collective grain output for the whole banner was 141 million jin or 22.8 percent higher than the 1978 figure. Total output of beetroot reached the figure of 12,000 jin, the highest level ever. Total output of oil-bearing crops was 4.2 million jin or 68 percent higher than the figure for 1978; the output of sunflower seeds, in particular, reached the record highest figure of 2 million jin. The year 1979 also saw the highest growth in the rearing of livestock for the past 10 years; the number of livestock reached 660,000 marking a gross increase of 24.4 percent or a net increase of 8.6 percent. During the year, the afforested are increased by 42,000 mu: this was 2,000 mu more than the increase for 1978. The production of industrial sideline produce also obtained greater development. The amount of revenue under the single item of enterprises run by communes or production teams was already 8 million yuan. The total revenue of the whole banner derived from agriculture and animal husbandry was 40.06 million yuan, which was 13 percent higher than the figure for 1978. Per capita income was 84 yuan, which was 14 yuan or 18 percent higher than that of 1978. With the large-scale

increase in the output of agriculture and animal husbandry, the contribution to the state also increased significantly. In 1979 over 31.35 million jin of grain, 2.52 million jin of oil-bearing crops and over 60,000 tons of beetroot were sold to the state; these figures were 108 percent, 168 percent and 161 percent respectively of the state purchase quotas allotted to the league.

Evident economic effects have also been obtained in each of the economic zones. In Da Shetai and Sudulun communes of the well irrigation zone, the grain output increased substantially and reached the figure of 48.29 million jin, which was 25 percent of the total output of grain in the 16 agricultural communes throughout the banner; of these, 18.86 million jin were sold to the state and this figure was equivalent to 60 percent of the grain sold to the state by the whole banner. In the Huanghe irrigation zone, good harvests were achieved on a comprehensive basis of grain, sugar and oil-bearing crops. The total output of beetroot in Shulinzi commune reached the record highest figure of over 20,000 tons; a per capita income of 82 yuan was obtained under the item of beetroot alone. In Xixiaozhao commune, the alkaline ground was used for growing large quantities of sunflowers and the output of oil-bearing crops was the highest ever recorded. In the nonirrigated hilly region, the output of Chinese yams was also the highest ever recorded; in Xiao Shetai commune alone, the output of Chinese yams reached 2 million jin, of which over 800,000 jin was supplied to the state.

Practice has made us realize that the working method of carrying out regional control and systematic guidance is the concrete expression of the party's line of thinking in leading the production of agriculture and animal husbandry, the application of the specific and general dialectical materialistic way of thinking in actual work and that so long as we implement such a working method, we shall really have a say in the work and have the right to take initiative in work. In order to correctly implement this working method, it is necessary to criticize the ultraleftist line, idealism and metaphysics as well as to insist on seeking truth from facts, relating theories to reality and proceeding always from reality; it is also necessary to go deep into reality, conduct investigation and research, analyze typical cases, give guidance according to specific conditions and use the experience of selected units to promote work throughout the entire area; moreover, it is necessary to act strictly according to natural and economic laws and to establish programs of agricultural development on a scientific foundation. Then, our ability to understand things and solve problems will be greatly improved and we can exercise practical and strong leadership in the production of agriculture and animal husbandry.

CSO: 4007

ECONOMIC JOURNAL DISCUSSES EXPERIMENTAL JOINT ENTERPRISES

HK091341 Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 7, 15 Jul 80 pp 21-22

[Article by Ministry of State Farm and Land Reclamation: "The Successful Experiments of Tuanshi Agriculture-Industry-Commerce Joint Enterprises of Zhejiang Province"]

[Text] The Tuanshi Agriculture-Industry-Commerce Joint Enterprise in Qu County, Zhejiang Province, was established in February 1979. It was formed by amalgamating 1 state farm, 1 regional farm, 4 people's communes (comprising five communal farms, 55 production brigades and 258 production teams). It owns over 49,000 mu of cultivated land, over 80,000 mu of barren hills which have yet to be cultivated, and over 5,000 mu of sandy wasteland. It has over 37,000 employees and commune members.

The experiment on agriculture-industry-commerce joint enterprises over the past year has achieved very commendable results. It was credited with 11 "increases" and 3 "improvements."

The 11 "increases" were: 1) increased grain production. Gross grain production was 55.58 million jin, an increase of 15.3 percent over the preceding year. Per mu output was 1,318 jin, an increase of 204 jin over the preceding year. 2) increased production of edible oils. The increases were: rapeseed, 49 percent; sesame, 400 percent, and peanut, 34 percent. 3) increased production of melons and other fruit: oranges, 200 percent and melons, 300 percent. 4) increased production of special products: tea leaves, 39 percent, and silkworm, 9 percent. 5) increased production of poultry and eggs: suckling pigs, 24.5 percent; poultry and eggs, 109 percent. 6) increased production value of commune-run industries. Gross industrial production value was 1.01 million yuan, an increase of 110 percent. 7) increased volume of commerce and trade. Commerce started from scratch. The total business volume amounted to 220,000 yuan; profits from industry and commerce were 60,000 yuan. 8) increased collective receipts. The gross output value of industry, agriculture, subsidiary farm production and commerce reached 9.33 million yuan, an increase of 3.11 million yuan over the preceding year.

or 50 percent. 9) increased collective accumulutions. Fund accumulations of communes and brigades increased by 340,000 yuan, an increase of 63 percent over the preceding year. Reserve grain increased by over 1 million jin. 10) increase income of commune members. Income distribution averaged 122.6 yuan per person, an increase of 30.6 yuan over the preceding year. Grain ration per commune member averaged 758 jin, an increase of [figure indistinct]. 11) increased contributions to the state. Commercial grain supplied to the state was 14.41 million jin, exceeding the target (6.25 million jin) by 178 percent. The sale of live pigs increased by 44.7 percent. The sale of rapeseed was 660,000 jin, surpassing the target set by the state by 100 percent. The sale of poultry and eggs to the state increased by over 100 percent. Capital construction in industry and agriculture progressed at a rapid pace, with high beneficial results. Over the past year, more than 2,600 mu of farmland and other land was reclaimed. Nine electrically irrigated projects were built from scratch. More than 20 li of irrigation ditches were opened up and more than 30 li of roads and tractor-plowing roads were newly built. Five oil pressing plants, one pastry plant, one bean products plant, one alcohol plant, one soy sauce plant, one cement plant, one prefabricated sand and stone products plant, one vehicle fleet, and one construction team were newly built or set up. Earthwork completed amounted to 11,000 square meters.

The three "improvements" were: 1) the degree of mechanization and use of motive power was raised. The power generation capacity increased by 280 kilowatts and the increase in mechanized motive power was 2,400 horsepower. 2) the living standard of commune members was raised. Many new houses were built, many wristwatches, bicycles and sewing machines were bought by the members and there was a substantial increase in their savings accounts. 3) the production enthusiasm of the cadres and the working masses was raised.

After a year's actual operation, the superior points of agriculture-industry-commerce joint enterprises were initially demonstrated, as seen in the following:

1. Initial change brought about by the practice of doing only one form of business. In the past, farms and the communes and brigades were basically concerned with only producing grain. What industry they had was of a weak caliber and there was no commerce to speak of. Following the experiment with agriculture-industry-commerce joint enterprises, while grain output was grasped simultaneously, attention began to be given to the production of such economic crops as tea leaves, oranges, peanuts, sesame and sugarcane. In addition, capital construction and the processing industry were vigorously grasped and promoted. To develop the economy and meet market needs, nearly a score of pastry plants, bean product plants, prefabricated cement product plants and oil pressing mills were newly built. This was accompanied by the setting up of construction teams and vehicle fleets. All these were instrumental in doubling the gross value of industrial output and profits.

2. Direct contact was made between the parties handling production and marketing and the intermediate links were reduced which gave the masses many conveniences and at the same time enlivened the market. Moreover, the joint enterprises sent direct shipments of their own products such as pastry, spiced beancurd, oranges, melon seed and sugarcane to such places as Hangzhou, Shanghai and Nanjing for trial marketing. Because these were new and novel products and their prices were cheap, they were well received. The customers all said: We have missed these kinds of candies for over 20 years now. Even peanut brittle has rarely been seen. Let us hope that more of these products will be supplied to the cities and towns in the future. Some shops, reception centers, guest-houses and plants offered to sign marketing agreements with the joint enterprises whereby they would sell to the enterprises the industrial products they had produced in excess of their targets and in return be supplied with farm sideline products. They hoped in this way to set up cooperation relationships and promote the interflow of goods between rural and urban areas.

3. The joining together of agriculture, industry and commerce has speeded up the turnover and accumulation of funds on the part of the communes and brigades. Starting from merely producing raw materials, the rural villages have begun to do their own processing and marketing tasks. Thus they can reap the profits from both processing and commerce and increase their fund accumulations with which they can buy the farm machines needed in agricultural production and also buy chemical fertilizer and other industrial goods. In this way they can promote the growth of agriculture, forestry, animal husbandry, farm sideline production and fishery, thereby bringing more wealth to the farmers, workers and employees.

Because of the development of production and the increase in the number of business items engaged in, a new road was opened up for surplus labor power in the rural villages and for the educated youths sent to the countryside. Last year, the joint enterprises found employment for over 80 educated youths who had been sent to the countryside for sometime and for young people in the rural villages.

The principal reasons for the comparatively good results achieved after only a year's trial production by the Tuanshi Agriculture-Industry-Commerce Joint Enterprises of Qu County, Zhejiang Province, were as follows:

1. The firm determination of the leadership and energetic support from the various departments. With regard to organization, the provincial party committee sanctioned the setting up of branch party committees in the enterprises and also of control organs over them. At the same time, they set up the county's public guilds and subordinate departments, despatching some 31 cadres there for these purposes. As to material resources, 6 motor vehicles were assigned to the enterprises and along with 64 large and small tractors, 66 sets of spraying and irrigating equipment, 200 tons of steel products, 300 tons of cement, 190 cubic meters of timber and 600 tons of chemical fertilizer. The county party committee also arranged for the enterprises an investment of 280,000 yuan and a loan of 660,000 yuan

from local funds. Leadership cadres of the provincial and county party committees and comrades of the provincial farm and land reclamation bureau frequently visited the enterprises and helped to study and solve problems.

2. Strictly carrying out the policies and handling well the relationships between the enterprises and the farms, communes and brigades. At present, the integrated enterprises embody three types of economies. They are: first, economy of state farms; second, collective economy of the communes, production brigades and production teams; and third, mixed economy of plants and shops newly established by the joint enterprises. According to the provisions of the joint enterprises, there is no change in the state collective ownership system. The state farms continue to follow the regulations handed down from the higher levels which provide for responsibility for both the profit and loss of handling a task. As to the communes, production brigades and production teams, the provisions of the "60 articles" are observed, and the three-level ownership system with the production team as the basic accounting unit is followed. This calls for keeping independent accounts and each being responsible for its own profit and loss. In the case of the newly established plants and businesses, separate accounts are kept and the indiscriminate transfer of profit remittances to the state is strictly prohibited. In purchasing raw materials, consultative meetings of representatives from the parties concerned are held at which adjustments and negotiations of prices can be made and the communes and brigades are assured a portion of the profits.

As a result of the establishment of the joint enterprises, the farms and communes have formed close relationships with each other. Disputes between them concerning hills, forests and land have been initially settled.

3. The composite operation of agriculture, industry and commerce, firm insistence on agriculture as the foundation and placing key role of work on production teams. The joint enterprises firmly insist on concentrating efforts to grasp agriculture. Economically, great support is given to agriculture. Farm machines, chemical fertilizers and farm medicine are all supplied to the farms strictly on time. Priority is given to the transport of support-agriculture materials. Guidance in technology is strengthened. As a result, agriculture and animal husbandry both reap bountiful harvests. This enables the processing industries to have plentiful raw materials and to supply more goods to the state and to the markets.

4. Depending on the masses, self-reliance and regeneration and much toil and hard work in starting businesses. The enterprises found it difficult to raise funds to set up plants and do construction work. They thought that they should not wait, or depend on others, or stretch out their hands for funds. Instead, they decided to make do with whatever was available. They stuck to the principles of self-reliance and regeneration and working hard and overcoming difficult struggles. They mobilized the

communes and brigades to raise funds themselves for purchasing farm machines. In setting up plants and businesses, old housing facilities were used as much as possible. When it was found necessary to put up new buildings, they would make meticulous calculation in advance and adhere to strict budgeting. They would start with the smaller buildings first and take up the larger ones afterwards. When it was found that the capital construction funds were not sufficient, they would mobilize the masses to contribute labor and materials, to be returned when the plants begin to make money. Existing housing facilities of communes and brigades were borrowed to be temporarily used as offices of cadres' dormitories. Absolutely no new buildings were constructed for the time being.

CSO: 4007

BRIEFS

SPRING COCOON HARVEST--This year the national spring silkworm cocoon harvest again achieved a marked increase over the preceding year's bumper harvest. As of 20 July the amount of spring cocoons procured amounted to 2.15 million dan, an increase of 19 percent over the corresponding period in 1979. This set a new record high for the country. This year the major characteristic of the spring cocoon output was the across-the-board increase. The cocoon-producing areas in the nation, except for one or two provinces (municipalities), all had increases of differing degrees. Increases in the major producing areas such as Sichuan, Zhejiang, Jiangsu, Guangdong and Shandong were fairly large. [Hong Kong ZHONGGUO XINWEN in Chinese 14 Aug 80 p 3]

HONEY OUTPUT DOWN--This reporter recently learned from concerned departments that at present production in the important honey producing areas in south and central China have been severely affected by such natural disasters as low temperature and much rain. In the major honey producing areas in the Northwest and the Northeast, although it was the peak season for honey production, yet, the production situation was not good. According to the statistics of concerned departments the total output of honey for our country this year will be reduced 50 percent compared to 1979. [Hong Kong ZHONGGUO XINWEN in Chinese 16 Jul 80 p 4]

MEETING ON GROWING SUNFLOWERS--Hohhot, 4 Sep (XINHUA)--Peasants and other people throughout China will be encouraged to grow sunflowers for seeds to provide more cooking oil, XINHUA learned from a national meeting on the production of sunflowers and linseed plants held recently in Hohhot, capital of Inner Mongolia Autonomous Region. The country now grows sunflowers on 800,000 hectares, compared with 366,000 hectares in 1979. The total output of seeds is expected to increase anywhere from 350,000 to 400,000 tons over that of last year. Nevertheless, 80 percent of the area now under the crop is in the three northeast provinces and Inner Mongolia. Participants in the meeting called attention to the fact that sunflowers grow well in thin, alkaline soils and are resistant to drought and cold weather. Therefore, they said, peasants in poor areas should especially be encouraged to plant more sunflowers to augment their income. [Excerpt] [Beijing XINHUA in English 1239 GMT 4 Sep 80 OW]

MIXED ANIMAL FEED PLANTS--China is promoting the use of mixed animal feed in developing its livestock industry. At present there are 79 plants making mixed animal feed, each with a capacity of more than 3,000 tons per year. The combined total output of these plants amounts to some 620,000 tons. In addition, 148 new plants will be completed in the future--their construction now either underway or in the preparatory stage. When completed, these new plants will add some 960,000 tons to China's annual production of mixed animal feed. [OW310515 Beijing Domestic Service in Mandarin 2230 GMT 28 Aug 80 OW]

HUNAN RICE SEMINAR--Changsha, September 8 (XINHUA)--A training course in the breeding of hybrid rice opened today in Changsha, capital of Hunan Province, central China. It is sponsored by the Chinese Academy of Agricultural Sciences and the International Rice Research Institute, which is based on the Philippines. Rice breeding specialists from the International Rice Research Institute and agricultural scientists from India, Bangladesh, Sri Lanka, Thailand and the Philippines are attending the course, and a scientist is scheduled to arrive from Indonesia tomorrow. Yuan Longping, an expert in hybrid rice breeding, and scientists from colleges and the Hunan Provincial Institute of Agricultural Sciences will give a series of lectures on breeding hybrid rice. Yuan Longping and other experts have made a study of hybrid rice of male-sterile line for many years. He and two other experts were sent to the United States by the Ministry of Agriculture this summer to pass on their experience to U.S. farmers. China now grows five million hectares of hybrid rice a year and Hunan Province accounts for one-fifth of the area devoted to this crops. [Text] [OW081324 Beijing XINHUA in English 1239 GMT 8 Sep 80]

CHANGJIANG RIVER FLOOD--Hefei, September 6 (XINHUA)--The flood peak of the Yangtze River caused by recent heavy rains has safely flowed past two crucial sections in the lower reaches of the river in Anhui Province and is now pouring through coastal Jiangsu Province. The water level of the Yangtze River registered at the Tatong hydrological station in the vicinity of the two crucial sections--Tongma and Wuwei--stood at 14.56 meters at eight o'clock this morning, 0.15 meters lower than the flood peak mark on September 4 but still 0.95 meters above the warning mark. The dykes at the two crucial sections that guard the vast grain producing plain on the northern bank (the terrain south of the river being hilly) have been raised and widened since the biggest Yangtze flood in a century occured in 1954. Since the river channel in Jiangsu Province is generally wide and the water level is influenced by the ebb and flow of sea tides, the flood peak has not caused any marked change in the water level. Cadres and people along the river are still keeping a close watch until the river level falls below the warning line. [Text] [OW061550 Beijing XINHUA in English 1506 GMT 6 Sep 80]

FINE CROP SEED--ZHONGGUO NONGMIN BAO reports: A great number of fine rice varieties have been developed over past years. Over 7 billion jin of hybrid rice alone was harvested last year. The acreage of hybrid corn accounts for about 80 percent of the total corn acreage now. There are also many fine varieties of wheat, cotton and other industrial crops. China now has over 2 million mu of stock and fine seed plots cultivated by state farms and over 10 million mu by collectively owned farms. They produce about 3 billion jin of fine seed each year. China's more than 1,900 seed companies at various levels buy and sell over 3.5 billion jin of seed each year. [Beijing Domestic Service in Mandarin 2230 GMT 27 Aug 80 OW]

QINGHAI-XIZANG PLATEAU PERMAFROST--Xining, 27 Aug--After 5 years of survey and research, the Chinese hydrogeologists have initially discovered the hydrogeological secrets of the permafrost regions of the Qinghai-Xizang plateau which are covered by ice and snow all the year round. They have concluded that the total area of the permafrost regions is 1.47 million square kilometers, or 66.8 percent of the plateau's total area. The average thickness of the permafrost layer is 20.5-80 meters, at the thickest point reaching 128 meters. The northern boundary of the permafrost is in Golmud County's Xidatan in Qinghai and the southern boundary lies in Xizang's Amdo County. The scientists have also discovered large tracts of underground water resources in the permafrost regions. [Beijing XINHUA Domestic Service in Chinese 0705 GMT 27 Aug 80 OW]

CSO: 4007

'ANHUI RADIO' REPORTS CONTINUING RISE OF RIVER WATER

OW091526 Hefei Anhui Provincial Service in Mandarin 1100 GMT 7 Sep 80

[Excerpt] The water level in the Changjiang River, after exceeding the danger level in mid-August, is continuing to rise, according to the ANHUI RIBAO.

At the Anqing station, the water level on 4 September reached 16.94 meters, or 0.86 meter above the danger stage there, the fourth highest level since 1954.

The higher than normal water level in the Changjiang River has caused levels to rise in all inland lakes along the river. The water levels in the Baidanghu, (Shahu), (Shenbinhu), Nanyihu and (Danyanghu) lakes have reached the highest recorded since liberation. The water levels in the (Huayanghu) and Wuchanghu lakes are now about 1 meter below their highest levels since liberation. The water in Chaohu Lake has reached the high level of 11.53 meters, the next highest level to that reached in the lake in 1954 and 1969.

The water level in the inland rivers connected with the Changjiang River is also very high. There have already been nearly 1,000 minor breaches in the dikes along the river. Some parts of the urban areas of Anqing and Wuhu cities, of the county capitals of Zongyang, Chaoxian, Wuwei and Lujiang counties and of many towns are now under water. Highway traffic has been blocked also in some places.

Because of the high water levels in the Changjiang and other rivers, protection of the river dikes has become very urgent and the situation at the inner river dikes is very dangerous. In order to insure the safety of the river dikes as well as factories, mines, cities and railways, all prefectures, cities and counties along the Changjiang River are acting in line with the call of the provincial CCP Committee and provincial People's Government to give first importance to the current task of flood-prevention and water drainage and are going all out in the struggle against floods and for relief. Now the number of cadres and civilian workers fighting along the Changjiang and other river dikes has reached 1.02 million.

CSO: 4007

BAD WEATHER HAMPERS FUYANG PREFECTURE'S AGRICULTURAL PLAN

Beijing RENMIN RIBAO in Chinese 2 Aug 80 p 2

[Article: "Fuyang Prefecture Strives Hard To Fulfill Annual Production Plan"]

[Text] ANHUI RIBAO report--The Fuyang Prefectural CCP Committee of Anhui Province recently held a forum that analyzed the present situation in agriculture, strengthened confidence, took effective measures, and pledged to wrest a bumper autumn harvest in an effort to fulfill the annual agricultural production task.

The abnormal weather in Fuyang Prefecture this year has created great difficulties for agricultural production, but the overall situation is still good. Throughout the prefecture, 6 million mu of spring-sown crops are coming along well, with sufficient base fertilizer and good growth. The majority of crops planted this summer on 9 million mu are growing satisfactorily. A minority of these crops, after water had been drained away, were rotationally planted or replanted. Although the timing was a little late, they still have a nearly 3-month growing period and, by proper management, can still yield a fairly good harvest. The prefectural party committee has stressed that, in order to obtain a bumper autumn harvest, all areas must firmly establish the idea of fighting natural disasters and wresting a bumper harvest, mentally preparing themselves to do well in combating drought, preventing waterlogging, and combating plant diseases and insect pests, and must overcome the idea that a "reduction in output is inevitable" and be determined to wage a long-term struggle against natural disasters.

All areas are now strengthening field management and are eliminating weeds on a crash basis. On rainy days they weed and thin out young shoots; on clear days they intertill and hoe--thereby insuring normal crop growth. Places that, during the soybean sowing season, did not receive an application of phosphate fertilizer and in which conditions exist for it, are now having their foliage sprayed with phosphate fertilizer. Corn, paddy rice, red taros, and gaoliang have received a topdressing of chemical fertilizer. Cotton, in addition to receiving applications of fertilizer, is being pruned

for ventilation and flowering purposes. August and September are the months when insect pests are most active, and all areas are heightening their vigilance against insect pests. At the same time, they are fully using machinery to get rid of waterlogging and are replanting green beans, red taros and other late-autumn crops, striving hard to enlarge the area sown to these crops in the wake of the natural disaster and thereby bring in bigger crops and, as far as possible, make up for the disaster-caused losses.

9727
CSO: 4007

BRIEFS

CROP YIELDS -Rice is the main crop in Dangtu County, Anhui. Besides rice, the county's peasants have also cultivated some 180,000 mu of wheat, with per-mu yield between 200 and 300 jin in recent years; 100,000 mu of cotton; some 180,000 mu of rapeseed; afforested 120,000 mu of land and raised over 300,000 heads of pigs. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 28 Jul 80 OW]

RICE PLANTING--Harvesting and planting of rice has been vigorously carried out in Wuwei County of Anhui Province. This county has so far harvested early rice from 210,000 mu of rice fields among the county's 630,000 mu of rice fields. The county has also completed planting work on 78,000 mu of late rice fields. The county plans to plant 570,000 mu of late rice. The per-mu output of early rice averaged between 600 and 700 jin. [Hofei Anhui Provincial Service in Mandarin 1100 GMT 31 Jul 80 OW] Zongyang County of Anhui Province has done a good job in both harvesting and planting of rice. By 28 Jul this county had harvested early rice from 240,000 mu of rice fields and completed planting work on 170,000 mu of late rice. [Hofei Anhui Provincial Service in Mandarin 1100 GMT 31 Jul 80 OW]

DRAFT ANIMALS--Funan County, Anhui Province, encourages its commune members to raise draft animals. Now there are 87,540 head of draft animals in the country. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 1 Aug 80 OW]

TOBACCO COMPANY--Recently the Anhui Provincial People's Government decided to establish the Anhui Provincial Tobacco Industry Company, which will be in charge of the procurement and distribution of tobacco and will exercise a unified management of production, supply and marketing of tobacco. It will also cooperate with agricultural departments in building bases for tobacco production and giving technical guidance. Anhui Province, one of the 3 biggest tobacco-producing areas in China, has registered the highest record of annual tobacco output of 1.09 million dan. Last year it turned out more than 900,000 cases of tobacco, ranking third in the nation after Henan and Shandong. [OW040621 Hefei Anhui Provincial Service in Mandarin 1100 GMT 1 Sep 80 OW]

CSO: 4007

'BEIJING RIBAO' URGES INCREASE IN VEGETABLE PRICES

OW0221336 Beijing XINHUA in English 1247 GMT 2 Sep 80

[Text] Beijing, September 2 (XINHUA)--The BEIJING DAILY today calls for measures to lower the cost of vegetable production and for higher state purchasing prices to stimulate the initiative of Beijing vegetable growers. The paper makes the call in a "Vegetable Study" column which it started today.

Supplies of vegetables in Beijing have been erratic this year and city residents have frequently complained about ill-planned supply, poor quality and a shortage of the most popular varieties.

But thanks to the joint efforts of the peasants and commercial workers, vegetable supplies in Beijing are showing signs of improvement. From August 1 to 25, which used to be a slack season, the daily supply came to 3,690 tons, more than the same period of 1975, the best growing season for vegetables.

Today's article, written by Wu Jingcong, of the Municipal Bureau of Agriculture and Forestry, and BEIJING DAILY correspondent Peng Shuyun says the main problem is a lack of initiative on the part of vegetable growers because of some policy questions.

The article says the cost of vegetable production has gone up rapidly during the past ten years, but state purchasing prices have fallen far behind the increase in production costs.

Costs go up, the article says, because an increasing amount of land is being set aside to grow vegetables in sheltered conditions for April, August and September, when vegetables are often in short supply. The prices of materials needed to protect the crops--rice straw, mats and bamboo sticks--have all gone up, and the price of seed has risen even faster.

The article says that although the state raised purchasing prices last year, it had little effect on the income of vegetable growers, thereby

curbing their initiative. Growers instead began to shift their interest to light industrial activities and side-line products that are more profitable.

The article calls on the purchasing agencies to study the problem earnestly, adopt measures to keep production costs down and lift purchasing prices on the condition that the extra cost is not borne by city residents.

CSO: 4020

BRIEFS

TEA RESEARCH--Fuzhou, 1 Sep (XINHUA)--Four new teas bred by the Tea Research Institute of Fujian Province in eastern China are being introduced throughout the province. Two of the new cross-bred varieties, fragrant and mellow-tasting, brought the Tea Research Institute awards at a National Science Conference 2 years ago. The institute, in Fu'an County, has bred more than 300 varieties of tea shrubs in addition to 100 more from other parts of China and abroad since its founding 28 years ago. It has opened a 47-hectare tea plantation for scientific research and breeding. Over the past dozen years, it has grown a total of 25 million tea saplings. The institute is staffed by 20 technicians, and has trained over 2,000 to work at the provincial, prefecture and county levels. Fujian Province is one of China's major tea producing areas. In the first 7 months of this year, its volume of tea sold to the state amounted to 15,685 tons, a 14 percent increase over the same 1979 period. [Text] [Beijing XINHUA in English 0709 GMT 1 Sep 80 OW]

EARLY RICE HARVEST--This year's summer harvest in Fujian has been completed with a slight increase in the early rice output. Yields per unit area and total output set new historical highs. Total output for this year's early rice reached 6.448 billion jin, an increase of 0.9 percent over 1979. The average per mu yield was 573 jin, an increase of 2.14 percent over 1979. The planted area this year was less than that of the previous years. Those areas with relatively large increases in early rice output were Longxi and Jianyang prefectures. Ningde, Jinjiang and Sanming prefectures also had increases. [Hong Kong ZHONGGUO XINWEN in Chinese 14 Aug 80 p 2]

SEMIANNUAL TIMBER OUTPUT--Fujian timber output for the first half of 1980 reached more than 1.79 million cubic meters, accounting for 57 percent of the year's plan. This is an increase of more than 12,000 cubic meters over the same period in 1979. According to statistics of 20 July, timber sent to other parts of the country amounted to more than 1.38 million cubic meters. This is more than 61 percent of the annual plan. [Hong Kong ZHONGGUO XINWEN in Chinese 30 Jul 80 p 1]

CSO: 4007

BRIEFS

HAINAN AGRICULTURE CONFERENCE--Recently, the Guangdong Agricultural Zoning Office and the Hainan Administrative Commissioner's Office jointly held a conference on the surveying of agricultural resources and agricultural zoning to discuss and formulate the scientific research tasks in Hainan. A total of 110 persons took part in the conference. Located in the tropical and subtropical zones, the climate in Hainan is moderate with sufficient rainfall and water resources and agricultural resources are very rich. There are great prospects for developing agriculture, forestry, animal husbandry, fishery and sideline production. Therefore, it is necessary to adopt effective measures to do a good job of surveying the agricultural resources in the region and launching agricultural zoning. This task must be grasped in the coming 3 years. [Haikou Hainan Island Service in Mandarin 0330 GMT 27 Aug 80 HK]

SERICULTURE--Guangzhou, 1 Sep--Guangdong Province harvested some 247,000 dan [piculs] of silkworm cocoons during the first half of this year. The amount surpassed the output for the same period last year by more than 10 percent. This year Guangdong Province has put into operation 25,000 mu of new mulberry tree farms in an effort to develop sericulture. [OW030525 Beijing XINHUA Domestic Service in Chinese 0200 GMT 1 Sep 80 OW]

TAISHAN COUNTY EARLY CROPS--This year Taishan County in Guangdong had an all-round bumper harvest of early crops. Total output of paddy rice reached more than 387 million jin. Compared to the same period in 1979, the amount of paddy has increased by more than 10 million jin, peanuts by 40 percent, soybeans by 70 percent, the first three crops of silkworm cocoons by 50 percent and fruit by 300 percent. The rice area was devreased by nearly 10,000 mu due to growing crops according to local conditions. But, because of excellent management, the more than 440,000 mu of rice had an increase in the average yield per mu of 10-20 jin over 1979. Total output of rice set new historical records. [Hong Kong ZHONGGUO XINWEN in Chinese 5 Aug 80 p 1]

CSO: 4007

BRIEFS

HEBEI, BEIJING, TIANJIN WATER SHORTAGE--Beijing, 31 Aug--The Ministry of Water Conservancy called an emergency meeting to review the serious water shortage in Beijing and Tianjin municipalities and Hebei Province. The Beijing-Tianjin-Hebei area has experienced serious drought this year. Except the Guanting and Miyun reservoirs, which have 1.4 billion cubic meters of water in storage, all the 22 large reservoirs in this area are almost empty. The meeting urged all trades and professions in this area, particularly the industrial enterprises in Beijing and Tianjin, to conserve water. The representatives to the meeting also expressed the hope that necessary water storage and diversion projects be included in the state's long-term plan so as to solve the water crisis in this area. [OW010049 Beijing XINHUA Domestic Service in Chinese 0732 GMT 31 Aug 80 OW]

CSO: 4007

BRIEFS

WHEAT PRODUCTION--Harbin, 30 Aug--Heilongjiang Province this year reaped good harvests of its more than 30 million mu of spring wheat. The total spring wheat output this year was about 15 percent more than the 1979 production. As of 25 August, people's communes and state farms in the province had delivered to the state some 1.7 billion jin of wheat, either as tax in kind or as sale of surplus grain, and thus fulfilled more than 50 percent of its spring wheat tax delivery and sale plan. [OW010049 Beijing XINHUA Domestic Service in Chinese 1515 GMT 30 Aug 80]

HARBIN WHEAT PRODUCTION--Mudanjiang Farm Administrative Bureau's 17 subordinate farms had procured 250 million jin of wheat by 23 August, of which first grade wheat accounts for more than 90 percent. These farms are now selling to the state surplus wheat produced above the quotas at 50 million jin monthly. [SK311335 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 29 Aug 80]

FLAX PRODUCTION--China's leading flax producer of Heilongjiang Province had a record harvest of 188,000 tons of flax this year, more than twice as much as the previous year. The province raised the purchasing price last year and a number of flax processing plants have been set up. The peasants planted this year more than 84,000 hectares, 32,000 hectares above 1979. [Beijing XINHUA in English 0700 GMT 8 Sep 80]

FORESTRY PROGRESS--More than 6,000 Korean pines which were transplanted ten years ago by scientific research workers are growing well in the forest region of Dahinggan Mountains in Heilongjiang Province. Korean pine is a valuable species growing in Xiaohinggan Mountains and Changbai Mountains. It takes 80 to 120 years to grow into useful timber, which has high quality and wide use. The successful transplanting of Korean pine added a new species to the Dahinggan Mountains forest zone where only larch, Scots pines and birch trees grew before. [Beijing XINHUA in English 0700 GMT 8 Sep 80]

CATTLE, SHEEP MARKETS--The Heilongjiang Provincial Commercial, Foreign Trade and Price bureaus and the provincial industrial and commercial bureau recently issued a joint circular which allowed the opening of markets for beef cattle and sheep sold at negotiated prices. The circular says that state farms, communes and individuals, after handing over the designated quantity to the state, are allowed to sell their cattle and sheep at village fairs at prices agreed upon by the buyers, including trade stations, restaurants, other institutions or individuals. The circular says that foreign trade and commercial departments will not change the quantity nor the prices of beef and mutton which are to be supplied to minority areas. [Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 3 Sep 80 SK]

FINE SEED BREEDING--In the past few years Heilongjiang Province has established many fine seed breeding bases to accelerate the breeding and popularization of new fine seeds. As a result, the variety of fine seeds has been increased, their quality improved and the acreage sown to early-ripening and high-yielding crops expanded. In 1979 the fields sown to early-ripening and high-yielding crops reached 48.39 million mu in the province. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 2 Sep 80 SK]

CSO: 4007

AERIAL SPRAY OF CHEMICALS PREVENTS HOT WIND FROM DAMAGING CROPS

Beijing RENMIN RIBAO in Chinese 2 Aug 80 p 2

[Article: "Wheat Output Increase in Henan Province This Year Proves Chemical Spraying by Aircraft Can Effectively Prevent Harm to Crop From Dry, Hot Wind"]

[Text] This year the Civil Aviation Administrative Bureau of Henan Province has closely cooperated with the province's Agricultural Department. When wheat entered the jointing and booting stage, the bureau, in order to protect the crop from damage caused by dry, hot wind, promptly dispatched 23 aircraft to spray more than 2 million mu of wheatfields with phosphoric acid 2HK and petroleum growth-inducing agents, to apply topdressing, and to spray plant hormones, thereby insuring the crop's normal growth. After the wheat had ripened, it was determined that the average output per mu would increase by 8.2 percent.

Following the development of our country's four modernizations, the airplane's service to agriculture has become an important part of agricultural modernization. Practice has proven that having aircraft spray chemicals and agents to protect wheat against dry, hot wind is advantageous in two respects: it is fast and efficient. An opportune time for spraying can be seized so as to insure that the farming season is not missed. One airplane on one flight can spray 400 mu, and in one day can cover over 1,400 mu, which corresponds to 900 human labor units. The cost of aerial spraying is low and its profit is great. Aerial spraying costs 7 to 8 jiao per mu, but for that slight expenditure the harvest is increased 8 fold. Wheat is usually protected from dry, hot wind when it is in the jointing and booting stage. Workers spraying the crop on the ground can easily damage it; by assigning aircraft to the task this problem is avoided. Aerial spraying distributes the chemicals and liquids uniformly and in a fine spray. The fast absorbtion of chemicals by wheat can increase the crop's milking rate.

Dry, hot wind is a major weather disaster that affects the stable and high wheat yields in our country's Huanghe River basin. By using aircraft to spray chemicals and liquids and growth-inducing agents over a large area, this natural disaster can be fought against when it occurs and output can be increased when it does not occur.

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CSO: 4007

BRIEFS

WHEAT CONFERENCE--Recently, the Henan Agriculture and Forestry Scientific Institute and the Henan Wheat Research Association jointly held a professional conference to study wheat. The participants seriously summed up and exchanged experiences and lessons in wheat research during the year. In accordance with the natural situation and ecological features, they have scientifically formulated plans on wheat production this year. Professors (Zhao Hongjiang) and (Mei Nan), well-known wheat experts in China, made academic reports. Professor (Fan Lian) of the Henan Agriculture Institute also made a report on "U.S. agriculture and agriculture science," based on his recent visit to the United States. [Zhengzhou Henan Provincial Service in Mandarin 1130 GMT 25 Aug 80 HK]

GUSHI COUNTY POULTRY BREEDING--Zhengzhou, 17 Aug--The total number of chickens, ducks and geese raised in Gushi County of Henan Province reached 5 million head this year. [Beijing XINHUA Domestic Service in Chinese 0114 GMT 17 Aug 80 OW]

CSO: 4007

WUHAN AUTHORITIES STRESS FLOOD CONTROL

HK310636 Wuhan Hubei Provincial Service in Mandarin 1100 GMT 30 Aug 80

[Text] According to the Wuhan Municipal People's Broadcasting Station, the Wuhan Municipal CCP Committee held a Standing Committee meeting on the morning of 29 August to study and convey the spirit of the provincial CCP Committee's emergency meeting on antiflood work. The conference decided that the municipal CCP Committee work conference now in session should immediately adjourn and that flood control work must be grasped as the current central task in all work in the city. The conference called on the people of the city to urgently mobilize and make every effort to insure the safety of Wuhan.

Except for one comrade in charge of routine work in the organs, all secretaries and Standing Committee members of the municipal CCP Committee have gone to the frontline of flood control work. Responsible comrades of Hanyang and Wuchang counties, Dongxihu and Hongshan districts and Hannan Agricultural Management Bureau who were attending the municipal CCP Committee work conference returned to their own units the same afternoon to take part in the flood control battle with the local people.

The Wuhan Municipal Flood Control Command held an emergency meeting on the afternoon of 29 August, attended by responsible comrades of departments concerned, to convey the spirit of the instructions of the provincial CCP Committee and flood control committee and the Wuhan municipal CCP Committee and make specific arrangements for flood control.

At present, flood control work in Wuhan is centered on the Changjiang and Han River embankments. In the afternoon Meng Xiaopeng, Xue Ziqun, Deng Ken and (Zhang Zhitao), responsible comrades of the municipal CCP Committee and People's Government, went to inspect six main danger spots on the embankments. They demanded that specific responsibilities be assigned to each person at those spots and that a close watch be kept on the situation. People must certainly not become slack and careless. The flood control force must obey orders. Cases of damage resulting from neglect of duty must be seriously dealt with.

CSO: 4007

HUBEI ISSUES URGENT CIRCULAR ON FIGHTING FLOOD

HK010454 Wuhan Hubei Provincial Service in Mandarin 1100 GMT 31 Aug 80

[Excerpts] The Hubei Provincial CCP Committee and People's Government issued an urgent circular on 28 August demanding that the army and people throughout the province make every effort to win final victory in fighting flood, draining waterlogged land, and carrying out relief through production. The circular demanded that party committees and government at all levels and the army and people throughout the province further mobilize, make still greater efforts and boost their determination to carry out the struggle against natural disasters. Severely stricken areas and flood diversion areas must currently persist in carrying out self-salvation through production, tidy up as soon as possible the farmland damaged by flood water, do everything possible to sow more vegetables and later autumn crops and reduce natural disaster losses to the minimum. At the same time they should open up more production avenues so as to increase income. They must make every effort to rebuild their homes and make the necessary preparations for reaping a bumper harvest next year. They should strive to insure that local production and living standards are restored to or exceed the pre-disaster levels within 1 year.

Areas lightly affected by the disaster must do everything possible to fight natural disaster and reap a bumper harvest. Other areas must redoubled their efforts to increase autumn output so as to make up for deficit areas and make greater contributions.

The circular demanded that party committees and government at all levels fully exercise their responsibilities for the masses in disaster areas, especially in flood diversion areas and severely stricken places, and organize all sectors concerned to provide full support. At present it is necessary to solve well the specific problems of the masses in production and daily life in those areas.

CSO: 4007

BRIEFS

CHANGJIANG FLOOD CREST--The greatest Changjiang flood crest of the year safely passed through Wuhan on 2 September. The water level at Wuhanguan continued to fall on 3 September. At 14.00 hours, the level was 27.67 meters, a fall of (?0.85) meters compared with 20.00 hours on 2 September. [Text] [HK040311 Wuhan Hubei Provincial Service in Mandarin 1100 GMT 3 Sep 80]

CSO: 4007

BRIEFS

FLOOD REPORTS--The people in the lake areas of Changde Prefecture have successfully resisted serious floods and waterlogging on 5 occasions after working hard for 80 days. Their arduous efforts were praised by the principal responsible comrade of the Hunan Provincial CCP Committee, who had come to the flood-affected areas to pay comfort visits to the affected people and guide work. Since late May, floods and waterlogging have occurred in the Li and Yuan rivers on a scale rarely seen since liberation. On some occasions, 600,000 laborers were mobilized throughout the prefecture to resist floods. [Changsha Hunan Provincial Service in Mandarin 2315 GMT 25 Aug 80 HK] From 1 to 20 August, Yueyang Prefecture continuously experienced heavy rain and rainstorms on several occasions, causing serious floods and waterlogging rarely seen before. At present, the disaster is getting worse; the floods have still not been harnessed. The cadres and masses in the affected counties are resisting the disasters to reduce the losses. Sun Guozhi, secretary of the Hunan Provincial CCP Committee and provincial governor, inspected the situation and studied the measures for resisting the disaster together with the local cadres and masses. [HK290922 Changsha Hunan Provincial Service in Mandarin 1100 GMT 26 Aug 80 HK]

LATE RICE INSECTS--According to the Hunan Agriculture Department, there are now more species of insect pests greatly threatening the growth of late rice. This year transplanting of late rice seedlings was delayed, the transplanting period was extended and more nitrogeneous fertilizer was applied. Since July, the climate has been abnormal, with more rain facilitating the outbreak of insect pests. The occurrence of leaf-borers is the highest in the past 10 years, while the number of late rice leafhoppers is also unprecedentedly large. The Hunan Agriculture Department has proposed direct preventive methods and demanded that all areas do this task well. Details of the methods are published on page 2 of the 23 August HUNAN RIBAO. [HK290922 Changsha Hunan Provincial Service in Mandarin 2315 GMT 22 Aug 80 HK]

CSO: 4007

CYL RECLAMATION FARM IN JIANGXI INCREASES PRODUCTION

Beijing RENMIN RIBAO in Chinese 2 Aug 80 p 2

[Article by reporters Tian Liu [3944 3177] and Zhang Pingli [1728 1627 0500]: "CYL Reclamation Farm in Jiangxi Increases Production Over 30 Fold in Past 10 Years"]

[Text] In only 10 years, the CYL reclamation farm in Jiangxi has increased by 36.7 times the total output value of its industrial and agricultural production, becoming the most advanced unit in developing production in the agricultural reclamation system throughout the country. Since 1973, the farm's total output of foodgrain has increased an average 26 percent each year, the individual field's output rising from 688 jin to over 1,400 jin. On 1,500 mu of mountainous land suitable for forests, forests are already coming into being; on 500 mu of water suitable for fish, fish are being raised and the annual fish output is over 50,000 jin. There has also been a very great development of other economic crops and of animal husbandry. In the past several years, the CYL reclamation farm has sold to the state 7.65 million jin of surplus grain, 100,000 jin of [rapeseed] oil, 3,300 pigs, and a large quantity of fish.

Farm-run industry has developed even faster. Industrial output value now accounts for 97.5 percent of the farm's total agricultural and industrial output value. Five years ago, 80 percent of the farm's staff and workers were engaged in farmwork; this figure has now fallen to 30 percent.

Following the comprehensive development of the economy, the life of the staff and workers has become more prosperous year by year. They and their dependents total 4,272 persons, and last year the average income of each person was 250 yuan.

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BRIEFS

SUNNING GROUND--Jiangsu Province's XINHUA RIBAO on 1 September carries an editorial entitled "Sunning Ground Is an Important Agricultural Capital Construction." It notes that many production teams in the province are still using dirt ground for sunning crops because they cannot afford to build concrete sunning ground. The editorial says that this year was supposed to be a year of bumper harvest for summer grain, but due to continuous rain and lack of good concrete sunning ground, some 1 billion jin of grain had been left to rot. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 31 Aug 80 OW]

COTTON PRODUCTION--Jiangsu Province has made headway in developing cotton production in the past few years. In 1978, Yancheng and Nantong prefectures, which produced more than 60 percent of Jiangsu's cotton, increased their cotton output by 1.66 million dan of ginned cotton over the previous year. In 1979 Jiangsu became the first province in China to produce 10 million dan of ginned cotton annually, 70 percent of which came from these two prefectures. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 30 Aug 80 OW]

SHAZHOU COUNTY RICE--Shazhou County, Jiangsu, has completed harvesting more than 150,000 mu of early rice and transplanting 220,000 mu of late rice. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 26 Aug 80]

WUJIANG COUNTY SHEEP PRODUCTION--By the end of July this year Wujiang County had 104,000 head of yellow sheep in stock. In 1979 the county sold 69,000 pieces of yellow sheep hides to the state. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 23 Aug 80]

FIELD MANAGEMENT--Xinyi County of Jiangsu Province has done a good job in field management for autumn-ripening crops. This county has more than 700,000 mu of autumn-ripening crops. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 29 Jul 80 OW]

CSO: 4007

BRIEFS

MEETING ON AGRICULTURE--The Jilin Provincial CCP Committee recently held an enlarged Standing Committee meeting to convey and implement the guidelines of the State Council's forum on building marketable grain bases in the northeastern part of the country. The meeting decided to firmly grasp the central link of realizing agricultural mechanization and speed up the building of marketable grain bases in Jilin. The comrades attending the meeting maintained that the provincial party committee's proposal for realizing agricultural mechanization throughout the province within the next 5 years was a practicable one. The meeting affirmed that it is necessary to continue to relax policies to develop production, and to implement the system of responsibilities to complete the tasks regarding grain and oil-bearing crops without any changes within the next 5 years. The meeting also decided to raise the procurement prices of soybean, minor oil-bearing crops and minor food grains. [OW301715 Beijing Domestic Service in Mandarin 1200 GMT 28 Aug 80 OW]

PORK PRICES DECREASE--Approved by the Jilin provincial people's government, Changchun, Jilin, Siping, Liaoyuan, Tonghua, Hunjiang, Baicheng, Yanji and Tumen municipalities in Jilin Province will decrease pork prices effective 1 September. Regardless of the quality of meat, each jin of pork will cost 0.2 yuan less. The retail price of meat processed after the price reduction will be lowered accordingly. [Changchun Jilin Provincial Service in Mandarin 2200 GMT 29 Aug 80 SK]

CSO: 4007

SEEDLINGS RECOVERING FROM EFFECTS OF BAD WEATHER

Beijing RENMIN RIBAO in Chinese 2 Aug 80 p 2

[Article: "Condition of Crop Seedlings in Liaoning Takes Turn for Better"]

[Text] Shenyang, 29 July (XINHUA)--Cadres and commune members in the rural areas of Liaoning have strengthened by all possible means the field management of major autumn crops in an effort to increase the output of autumn grain. Throughout the province, autumn grain crops have now been weeded and the soil around them loosened three times. After an additional application of fertilizer to the three categories of seedlings, the condition of the seedlings has begun to take a turn for the better.

In April and May of this year, the rural areas of Liaoning Province suffered from bad weather: low temperatures, little sunshine, high winds, and dryness. This caused the crop seedlings to sprout late. After summer began, some places were hit repeatedly by hail. In order to fight the disaster by replanting and field management, in many production teams the production responsibility system of contracting work out to the team and having unified output plans and awards has been put into practice. The summer hoeing field responsibility system of having the team take care of the plots of land and the individual take care of the ridges between the fields and of having "one contract and three proliferations" is being fairly widely practiced, or the method of having the team plant and the household manage and of awarding bonuses for fixed quota fulfillments after autumn begins is being carried out, thereby accelerating progress in all tasks. In Hengren County, 1,073 production teams have adopted the production responsibility system of contracts, fixed quotas, and bonuses, and they all have, on schedule and in the amount specified, completed weeding and soil loosening, topdressing, and elimination of insect pests by pesticides. In the important paddy rice-producing areas of Yingkou, Dandong, Shenyang, Fushun, and Liaoyang, on a third of the paddy fields chemical agents have been used to eliminate weeds, topdressing has been applied in good time, and the rice shoots are not growing well. In Luda, the key peanut-producing area, and in Jinzhou Prefecture, the growth of peanut seedlings is being restrained in order to promote root development and the seedlings are growing sturdily. The great majority of drought-resistant cotton sown on 570,000 mu has already blossomed and squared and is growing well.

Most areas have replanted and irrigated some plots of land that were severely hit by disaster. Some areas have replanted these plots with short-growth period rape plants. Some counties and cities have allocated disaster-relief goods and materials to help the communes and production teams to provide for and help themselves in fighting the disaster.

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CSO: 4007

BRIEFS

AGRICULTURAL PERSONNEL'S EXAM--The Liaoning Provincial Agricultural Bureau recently issued a circular stating that all employees at agricultural departments who received college degrees during the 10-year turmoil must take another uniform examination. Those passing the examination will receive professional designations as assistant agronomists or agrotechnicians. Those who fail may try again next year. Those who cannot pass the examination will be assigned to other suitable jobs. [SK311214 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 28 Aug 80 SK]

GRAIN BASE FORUM--The Liaoning Provincial Party Committee and the people's government held a forum 21-25 August on building marketable grain bases in the province's central area. Responsible persons from the 17 counties and districts where bases will be built attended the forum. Others attending were responsible persons from provincial organs, the provincial party committee, the provincial people's government and departments concerned. [SK311214 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 29 Aug 80 SK]

CSO: 4007

BRIEFS

ANTI-DROUGHT, INSECT MEASURES--Fengzhen County, Nei Monggol Region, has adopted feasible measures to combat drought and insect pests. Since the beginning of this summer, about 1.1 million mu of its 1.4 million mu of farmlands have suffered from drought. About one-third of the farmlands have been plagued by insect pests. Some communes and brigades in the county have even been plagued by hailstorms. In view of the serious drought in the county, the Fengzhen County CCP Committee and the people's government called on the masses to strengthen autumn field management, adopt effective measures to prevent harvested wheat from rotting and strive to develop sideline occupations to make up for the decrease in income caused by the drought. [SK311328 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 27 Aug 80 SK]

GRASSLANDS INPROVEMENT FORUM--The Ministry of Farmland Reclamation recently held a forum on grasslands improvement and science and technology exchanges at a cattle breeding farm in Nei Monggol. Attending the forum were representatives from 12 key pastoral farms in Heilongjiang, Jilin, Hebei, Xingjiang, Ningxia and Nei Monggol. The forum held that building man-made grasslands, improving natural grasslands and raising the output, quality and variety of grass are not only current pressing tasks for combating drought but also the only ways to increase the number of livestock and meat producing animals, thus satisfying the needs of the people and realizing modernization in animal husbandry. [Hohhot Nei Monggol Service in Mandarin 1100 GMT 27 Aug 80 SK]

INNER MONGOLIA BANNER FAIR--A Nadam fair was held from 1 to 7 August at Siziwang (Dorbod) Banner, Inner Mongolia, to celebrate the banner's success in livestock production this year despite continuous drought in spring. Statistics at the end of June showed that the banner's total number of animals was more than 1,059,000 head, an increase of more than 261,700 head over the last year, and the number of privately-owned livestock was 310,000 head, an increase of 81,000 head over the last year. [Beijing XINHUA Domestic Service in Chinese 1243 GMT 20 Aug 80 OW]

CSO: 4007

BRIEFS

LAMB SKIN PURCHASES--Beijing, September 8 (XINHUA)--Over 158,000 tan lamb skins were purchased this year in the Ningxia Hui Autonomous Region, northwest China, 11.2 times the same 1979 period. This world-famed pelt is white, lustrous, light and soft. [Text] [OW080806 Beijing XINHUA in English 0700 GMT 8 Sep 80]

CSO: 4020

TENDING OF AUTUMN CROPS STEPPED UP TO COMBAT EFFECT OF BAD WEATHER

Beijing RENMIN RIBAO in Chinese 2 Aug 80 p 2

[Article: "Shandong Strengthens Autumn Field Management, Strives for Bumper Autumn Harvest; In Some Disaster-Stricken Areas Autumn Crops Have Already Been Restored to Normal Growth"

[Text] Ji'nan, 1 August (XINHUA)--All rural areas in Shandong Province are strengthening autumn crops field management and are striving for a bumper autumn harvest. So far, more than 50 million mu of autumn crops have been topdressed, and plant diseases and insect pests have been prevented or controlled on over 26 million mu of autumn crops. In general, cotton, peanut and sweet potato fields have been strip-hoed two to four times. Not long ago, some areas were hit by rain and hail storms, but the autumn crops in these areas have been restored to vitality.

Autumn crops account for about two-thirds of Shandong's annual total food-grain output. In the first 10 days of July this year, 5.1 million mu of autumn crops in some areas of the province suffered a natural disaster from hail and torrential rain. To insure the normal growth of autumn crops, in areas where crop damage was fairly light, intertilling and scarifying, shock topdressing and insect extermination, have been carried out in good time, thereby spurring the rejuvenation of the crops. On plots of land where the prospects for a harvest have been cut off or basically cut off, shock "double" planting of summer yams, small foodgrains other than wheat or rice, soybeans, and early-ripening corn have been carried out. In cotton fields in which the cotton stalks had been stripped bare by hail, foodgrain crops or vegetables have been interplanted in order to try by all possible means to produce more grain and vegetables. Zhucheng County, which had been hit fairly hard by this natural disaster, adopted increased planting of autumn vegetables as a major measure to counter the disaster. A plan to plant autumn vegetables on 50,000 mu throughout the county is being put into effect, and radishes have already been planted on 25,000 mu. Some disaster-stricken counties and communes, while fighting the natural calamity, have made great efforts to get a good grip on the industrial sideline production of the collective and of the commune member households in order to make up for the agricultural losses.

In the struggle against the calamity, all areas are working in full cooperation and with a unity of purpose, mutually assisting each other. Areas in which no disaster occurred help disaster-stricken areas, areas lightly hit by disaster help those severly hit, and areas severly hit do all they can to provide for and help themselves. All trades and professions in the province are helping the disaster-stricken areas by all possible means. The Transportation Department has given disaster-stricken areas priority in the transportation of goods and materials. Supply and marketing, commerce, and foodgrain departments have vigorously allocated to the disaster-stricken areas chemical fertilizer, agricultural chemicals, and seeds. Banking and finance departments have promptly raised funds and extended credits in order to assist the disaster-stricken communes and production teams to develop production.

In areas that have not yet been hit by the rain and hail disaster, cadres and commune members, overcoming a paralysis in their thinking, have made good preparations to counter the disaster should their areas be hit.

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CSO: 4007

BRIEFS

COTTON PROCUREMENT--The Shandong Provincial People's Government recently issued a circular on procurement of cotton. The circular states: 1) Cotton grown collectively should be procured collectively with the production team as a unit; 2) Cotton in excess of the procurement quota should be purchased with increased price; 3) Cotton grown by state farms, schools, PLA units, enterprises, individuals or production teams not assigned with procurement quotas should be purchased with the increased price; 4) Marketing of cotton is strictly forbidden throughout the year; and 5) When procurement of cotton is drawing to an end, supply and marketing cooperatives are responsible to purchase with cloth coupons the commune members' privately owned cotton. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 3 Sep 80 SK]

CSO: 4007

BRIEFS

PORK PRICES--The department concerned of Shanghai Municipality has decided to temporarily supply the public with refrigerated pork at reduced prices starting 2 September. The prices of ham, loin chop and pork ribs will be reduced to 1.1 yuan, 1.15 yuan and .78 yuan per jin respectively. [Shanghai City Service in Mandarin 2300 GMT 2 Sep 80 OW]

VEGETABLE SHORTAGE--According to JIEFANG RIBAO and WEN HUI BAO, Shanghai Municipality has been experiencing for some time a serious shortage of vegetables. Many residents have to get up at 2 or 3 in the morning and line up for several hours in order to buy even 1 or 2 jin of vegetables. Latecomers have no vegetables to buy. This situation has aroused strong dissatisfaction. In this connection, the municipal people's government called a meeting on 2 September of responsible comrades of the agricultural commission, the finance and trade office, the planning commission, the No 2 commerce bureau and the agriculture bureau to study and adopt specific measures to solve the problem. Vice mayors Wang Daohan, Chen Jinhua and Chen Zonglie attended the meeting. The vegetable shortage was attributed to natural disasters and the failure to implement the policy on production and marketing of vegetables. [Shanghai City Service in Mandarin 2300 GMT 2 Sep 80 OW] Due to bad weather, Shanghai now receives only 10,500 dan of vegetables daily, a sharp cut from the normal 50,000-60,000 dan daily. The shortage of vegetables will continue to mid-September. [Shanghai City Service in Mandarin 1130 GMT 31 Aug 80 OW]

CSO: 4007

BRIEFS

WATER CONSERVATION MEETING--The Tianjin Municipal CCP Committee and the municipal people's government held a mobilization rally 26 August urging the whole party and all people in Tianjin to combat drought and conserve water. The rally noted that the climate has been very abnormal since the beginning of 1980. Precipitation in Tianjin in July was only some 32 mm, 80 percent of what it was in corresponding periods in previous years. Since August, Tianjin has received only 30 to 50 mm of rainfall, a drought rarely seen in the city. In view of the seriousness of the drought, the rally called on various localities, departments and units to utilize water in a planned and rational manner to reserve more water for production and daily use. [Tianjin City Service in Mandarin 1430 GMT 27 Aug 80 SK]

CSO: 4007

WATER SUPPLY ON STOCK ROUTES ENSURED

OW091237 Beijing XINHUA in English 1205 GMT 9 Sep 80

[Text] Urumqi, September 9 (XINHUA)--The Xinjiang Uygur Autonomous Region allocated 800,000 yuan this year to four counties to the north and west of the Junggar basin for building wells and other water supply projects along routes leading to grazing grounds in the basin. In the past the herds often suffered from thirst and some of them even died for want of water on the routes.

Wells, water storage pits, houses and animal sheds are being built by teams sent by county governments and people's communes. A number of settlement centers have already come into being in the southern parts of the pastures.

About one million head of sheep and cattle from nearby counties overwinter every year on the vast grazing grassland in the central part of the Junggar Basin. In the past, the herds driven to or from the grassland got water from snow as they crossed the surrounding semi-desert area in the Junggar Basin. At times when snow was not available, the people's government had to airlift or truck ice to the herds.

Water conservancy technicians sent out by the Xinjiang regional people's government have just selected seven routes totalling 760 kilometers in length, along which 54 water supply centers will be built. The centers will provide drinking water for 10,000 herdsmen and 600,000 head of cattle, sheep and horses.

Last year, 15 water supply projects were built along a 200-kilometer-long route in the northern part of the basin.

Survey for underground water began in 1978 in the southern part of the basin. So far 170 wells and a number of springs have already been dug there.

CSO: 4020

BRIEFS

XINJIANG JUNGGAR BASIN--Urumqi, 28 Aug--The people in Xinjiang are stepping up the improvement of the more than 70 million mu of grassland in the Junggar Basin, which is short of water. Well sinkers and capital construction workers are sinking wells, digging ponds and putting up buildings here. So far, a 200-km pastoral path with 15 water supply stations in the north part of the grassland has already been built up. Aside from allocating funds for well sinking in the south part of the grassland, the regional government this year has appropriated some 800,000 yuan to finance the building of a 760-km pastoral path with 54 water supply stations in the north and west parts. [OW010049 Beijing XINHUA Domestic Service in Chinese 0704 GMT 28 Aug 80]

GOAT BREEDING--Kashi Prefecture of Xinjiang Autonomous Region has introduced a new species of goat to its rural area. This prefecture now has 1,000 head of goats. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 31 Jul 80 OW]

INCREASE IN LIVESTOCK--According to statistics as of the end of June, Xinjiang had some 31 million head of livestock, an increase of 5.2 percent compared with the 1979 corresponding time. Xinjiang has increased its livestock production for 3 consecutive years. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 29 Jul 80 OW]

CSO: 4007

BRIEFS

SMALL SPRING GRAIN OUTPUT--Overcoming such natural disasters as drought, disease and insects, the small spring grain crops such as wheat and broad beans produced bumper harvests. Total output reached 2.4 billion jin, an increase of more than 10 percent over 1979. [Hong Kong ZHONGGUO XINWEN in Chinese 30 Jul 80 p 1]

CSO: 4007

WET GRAIN DAMAGE TO EARLY RICE CROP COUNTERED

Jianxing, Hangzhou Prefectures

Hangzhou ZHEJIANG RIBAO in Chinese 6 Aug 80 p 1

[Text] Between 30 July and 3 August, on one day or another every county in Jianxing Prefecture was hit with high winds and torrential rains, and in many places the water level in lakes and ponds rose rapidly. The farmland area throughout the prefecture that was innundated amounted for a time, to more than 1.4 million mu. Comrades in charge at the Prefectural CCP Committee and the Provincial Administrative Office, as well as eight work teams organized by prefectural cadres concerned, went to each individual area to help drain the water and combat calamity in order to do a good job of rush harvesting of one crop and rush planting of the next. Party and government leaders from each county, and government cadres proceeded to the front line to organize and lead the masses in combat against the damage caused by rainfall and waterlogging. At 20 communes in Jiashan County, more than 162,600 mu of early rice had lodged; 84,300 mu of early rice was waterlogged; and serious uprooting occurred to some late rice that had just been transplanted. Except for two members who remained at home, the 11 member Standing Committee of the County CCP Committee led cadres to the separate communes of Huimin, Lize, Dashan, Hongqi, and Xiangyang to inspect the submerged fields, and to organize special teams to open ditches at once to drain the water. In lowlying places, they also made rush repairs on more than 20 embankments and dams. They closed more than 20 floodgates and put into operation 452 irrigation and drainage machines. Within 2 days the water standing in the fields had been largely drained away. Comrades in charge from the Wuxing County CCP Committee went to the Lianshi, Shuanglin, Zhili, and Kangxi areas to make a concerted effort, in conjunction with the cadres and masses, to rush drain the accumulated water from the fields. Well in advance of the arrival of the rains and the waterlogging, this county had repaired and constructed dykes and embankments, and had dredged its drainage system in a planned lowering of the water level of inland streams; consequently, following the torrential rains, the more than 2000 pumping points throughout the county started up and rapidly drained away the accumulated water from 730,000 mu of land.

During the past several days, Hangzhou Prefecture has had continuous high winds and torrential rains. Some areas have become waterlogged. Incomplete statistics show that in Xiaoshan, Chunan, Xihu, and Jianggan counties (or districts), more than 46,000 mu of early rice has been flooded. A large amount of unhusked rice has begun to sprout and mold. Some cotton, hemp, and food grains other than wheat and rice have been flooded too.

After the disaster, every echelon of leadership immediately organized the masses to combat calamity and reduce the loss. The deputy director of the Municipal CCP Committee, Wang Fusheng [3769 1381 3932] and the Municipal CCP Committee Standing Committee director in charge of agriculture, Liu Yanru [0491 1693 0320] paid separate visits to Linan and Chunan counties to help the county CCP committees study and overcome the hardships occasioned by the rains, taking prompt action to rush harvest so as to prevent the paddy rice from sprouting and mildewing. Ten of the 12 members of the Standing Committee of the Xiaoshan County CCP Committee visited the front lines of combat against the disaster, with the other two remaining at the office to take care of affairs. In Fuyang, Yuhang, Jiande, Tonglu, Xihu, and Jianggan counties (and districts), cadres from every echelon went down into the production teams to take various measures to prevent the molding and sprouting of the paddy rice.

Shaoxing County

Hangzhou ZHEJIANG RIBAO in Chinese 7 Aug 80 p 1

[Text] Taking note of recent tendencies in the weather, the Shaoxing County CCP Committee has required rural communes and brigades throughout the county to make a worst case plan and had put forth a slogan of "harvest in the rain and plant in the rain to fulfill 'double summer' tasks according to plan." At the present time the entire county is in process of vigorously promoting experiences with sheet iron grain dryers to process wet grains, giving attention to the indoor drying work to promote the summer harvesting and summer planting.

Seriously flooding of 40,000 mu of early rice resulted from torrential rains throughout this county, and more than 30 million jin of harvested grain began to sprout. Despite the use of numerous methods by many places to prevent sprouting and mildewing of grain, effectiveness was not high and the quality of the grain could not be guaranteed. It was under these circumstances that the Huangfu, Keyan, and Huashe communes created a sheet iron grain dryer as a new method for the emergency handling of large amounts of wet grain. This sheet iron grain dryer is easily built [of either brick or stone and mortar] at lost cost for high effectiveness with no change in grain quality. The dryer is about 80 centimeters high, 2 meters long, and 1 meter wide, and has a piece of black sheet iron 1 to 2 centimeters thick laid across the top of it. A fire is built at both ends of the structure, and at one end is a 2-meter tall chimney for draft. A single stone mason working alone can build such a dryer in 3 hours at a

cost of slightly more than 20 yuan, and it may be used the following season as well. Rice or wheat straw is used for fuel. When in operation, each dryer is tended by one man who takes care of the fire, and two men who take care of the drying. They dump the wet grain on top of the sheet iron and keep turning it. When it becomes hot to the touch, it is raked off and taken away by still others. According to statistics from the Hongqi Brigade in Huangfu Commune, a single sheet iron dryer can dry about 1000 jin of grain per hour. The dried grain is spread out and electric fans or bellows are used to cool it. After cooling, no change in quality within about 5 days may be guaranteed. If a production team can operate 2 such dryers (or a single dryer with two iron sheets butted together), they can process in a single day the wet grain harvested from 30 mu. At 5 p.m. on 2 August, the Guangming the 3 team of Huangfu Commune built a dryer, and at 7 p.m., they fired it up and began to dry grain. By noon of 3 August, they had preliminarily removed water from 20,000 jin of wet grain thereby removing it from danger of spoilage. Warehouses were cleared out and the initiative was taken in harvesting. The team leader said happily, "At this rate I can harvest as usual on rainy days." Though it rained off and on on the 4th, the entire team harvested 26.4 mu of the early rice crop nevertheless.

On 4 August, the Shaoxing County CCP Committee held an on-the-spot meeting at the Huangfu Commune to promote this experience throughout the entire county. After the meeting was over that afternoon, every district and commune worked hard throughout the night, and most of the commune leaders themselves turned a hand to the construction of the dryers and experimentation with them. At dawn on the following day, an on site meeting of production team leaders from throughout the commune was held. The Mashan district got underway early, and virtually every team has already put up a dryer to dry more than 1.7 million jin of grain. Fifty-eight production teams in Huangfu Commune built 74 dryers, and they have already dried more than 600,000 jin of grain, harvesting and drying as they go. The Doujiang Commune built 69 dryers, and has already dried 420,000 jin of grain. The County CCP Committee has asked that every locale give fullest attention to the harvest, continuing, even in bad weather, to fulfill harvesting quotas basically according to plan. The broad masses of cadres and masses in Shaoxing County are full of confidence and determined to harvest a bumper crop of late rice.

Linhai County

Hangzhou ZHEJIANG RIBAO in Chinese 5 Aug 80 p 1

[Text] The director and three deputy directors of the Linhai County Grain Bureau have led 531 grain cadres and employees to inspect damp grain in communes and brigades, and to help production teams take emergency steps so that 9.83 million jin of hot, damp grain can be made safe.

Leaders in this county's grain bureau have discovered that because of the continuous overcast and cloudy weather of the past several days, the sunning and care of the harvested paddy rice has been difficult, and in some communes and brigades, high temperatures are endangering the damp grain. In order to protect the fruits of the bumper harvest by the broad masses of commune members, and to do a good job for state grain procurement, they held an emergency meeting at once to make the damp grain that had been inspected become an urgent matter to be dealt with right now. Leaving only a few people on duty, the Grain Office assigned 20 people to inspect the damp grain. On 2 August, the County Grain Bureau director, Yuan Xiaosheng [5913 1420 3932] and three deputy bureau chiefs organized 531 grain cadres and employees throughout the county to go down to 3353 production teams to inspect 40.7 million jin of damp grain. Wherever they went, they actively propagandized the importance of doing a good job now in taking care of the grain, disseminating information on grain care as they made temperature checks of the grain in every pile and every warehouse. When they discovered problems, they took individual remedial measures. Four teams headed by a deputy director of the Grain Bureau went separately to 266 production teams in 42 production brigades in the three communes of Xunqiao, Chengdong, and Chengnan to inspect 7.18 million jin of damp grain. As a result of their inspection, they discovered that more than 3.3 million jin of the grain had a temperature of over 40°C, of which 430,000 jin was in the danger zone of higher than 50 degrees.

They then adopted various measures at once to reduce the temperature of this damp grain such as use of fans, bamboo tubes for ventilation, sealing it in nylon in the absence of oxygen, spreading it in thin layers for drying, trenching the piles of grain to reduce temperatures, heat drying it, and moving it to individual households for care in order to bring down the temperature of the damp grain rapidly.

9432
CSO: 4007

PROBLEMS IN SELLING PORK THREATEN ENTERPRISE GROWTH

Storage Facilities Filled

Hangzhou ZHEJIANG RIBAO in Chinese 6 Jun 80 p 1

[Article: "Conscientiously Solve the Difficult Problem of Farms' Sales of Pork"]

[Text] Farmers in many places are at present urgently hoping for a solution to the difficult problem of selling their pork. This matter relates to the farmers' personal well-being and to the continued growth of hog-raising enterprises. Leaders everywhere should give it serious attention and conscientiously solve it.

Hog raising is intimately related to agriculture, to industry, to the people's livelihood, and to the total national economy. Great growth has occurred over the past several years in the production of slaughter hogs, setting the highest records in history. This is a good development. The glaring conflict at the moment is that state purchases of slaughter hogs are greater than sales. Storage facilities are filled to overflowing, and some places have had to curtail procurement. Unable to sell their fattened hogs, the farmers cannot replenish the numbers of hogs at once. As a result, the price of shoats has declined and the number of sows has been reduced. Under such circumstances, the difficulties are magnified for commercial units in overcoming the problem of buying more and selling more to maintain production growth. Limited procurement impairs production growth, and this is a problem that is urgently in need of solution at present. It must be appreciated that hog production growth has been hard won, and that the level of slaughter hog production in our country and the level of pork consumption are still very low. Looked at in long-range terms, the quantity of slaughter hogs is not too great, and there should be continued development. The program of active development of collective hog raising and of continued encouragement to commune families to raise hogs is unshakable. When there are a lot of hogs, it is necessary to buy them up actively and to expand sales--particularly to expand sales of pork in rural villages--using sales to promote purchases and purchases to promote production. There is a great

deal of potential here and many bright prospects. Every place should study further how to maintain continued hog production and how to bring about increased purchases and increased sales. Purchase prices cannot be changed, and the policy of encouraging the raising of hogs must remain stable. Ways have to be found or devised to solve the difficult problem of selling hogs to preserve the enthusiasm of the farmers for the raising of hogs and to promote the continued growth of hog production.

Pork Prices Reduced

Hangzhou ZHEJIANG RIBAO in Chinese 6 Jun 80 p 1

[Text] In order to increase pork sales further, to do a good job of procurement in the small peak period for slaughter hogs, and to maintain hog production, the Provincial People's Government has decided that between 5 and 20 June, the price of fresh (or frozen) pork will be reduced by 20 percent from its present retail price and supplys will be unlimited in the cities and countryside. A price reduction will also be made at the same time for the heads, feet, and offal of hogs. There will be no charge in the prevailing prices for slaughter hogs paid by the state.

9432
CSO: 4007

AID PROVIDED FOR MOUNTAIN AREA DEVELOPMENT

Hangzhou ZHEJIANG RIBAO in Chinese 2 Jul 80 p 1

[Article: "Provincial Supply and Marketing Cooperatives Have Allocated 1.5 Million Yuan To Support Eleven Mountain Counties in Their Development of Commodity Production"]

[Text] Editor's Note: Intensification of the buildup of mountain regions is a major strategic measure in our province's four modernizations. Development of mountain areas requires help from every quarter. Communes and brigades and supply and marketing cooperatives have long relied on each other and helped each other advance in an extremely close relationship. Now, in order to meet the needs of agricultural modernization, agriculture and commerce must extend their hands further in intensified cooperation, working together with one mind to make a contribution to the development of the economy of mountain regions.

Provincial Supply and Marketing Cooperatives recently allocated 1.5 million yuan, drawn from profits, to develop commodity production in the 11 counties of Qingtian, Yunhe, Jinyun, Taishun, Wencheng, Yongjia, Pingyang, Shanju, Tiantai, Sanmen, and Changshan.

In order to realize the best economic benefits from these production support funds, provincial supply and marketing cooperatives and comrades from the county supply and marketing cooperatives and companies concerned made a joint analysis of the natural conditions in each county, in order to capitalize on advantages while avoiding disadvantages and make the most of the superior qualities of each place. They worked out the major projects and the amount of funds to be invested for development in each county, guided by the principles of social needs and small investment, quick results, great benefits, and ease of transportation. Major crop varieties selected were day lilies, mushrooms, black wood fungus, raw

lacquer, false indigo, and Angora rabbits. The supply and marketing cooperatives used investment to provide supply or else helped communes and brigades set up special native product commodity bases, using loans to provide support. No matter what method was used, no interest was charged for investment funds or loans provided by the commercial sector, nor was there any apportionment of profits from production. However, the agricultural sector had to repay the investment funds from earnings or in time payments. In accordance with the principle of mutual benefits from joint development, farm businesses sold most of their products to the supply and marketing cooperatives. In order to provide for market and export needs, some were retained by the communes and brigades to be disposed of by themselves. The actual ratio between purchases by the cooperatives and goods retained was decided through consultation by both parties. Contracts were signed, and these were verified by industrial and commercial management departments and accounting committees for joint observance so as to assure fulfillment of the contracts.

9432
CSO: 4007

SHRIMP RAISING BECOMING ENTERPRISE WITH BRIGHT FUTURE

Hangzhou ZHEJIANG RIBAO in Ch'nese 12 Jun 80 p 1

[Article: "Millions of Shrimp Fry Bred in Our Province; Full Use Made of Natural Advantages To Actively Develop Marine Breeding"]

[Text] This reporter has learned from the Provincial Aquatic Products Breeding Company that by the end of May more than 10 million shrimp fry had been bred at shrimp fry raising farms throughout the province. These have been placed in state-owned breeding farms and in 1,500 mu of marine ponds for raising in Wenling, Leqing, Dongtou, Putuo, and Ninghai counties. This represents a twofold increase in the area devoted to breeding over last year.

The artificial raising of shrimp is an enterprise with a future for development in this province. Shrimp are an aquatic product with quite high economic value. Their protein content is higher than that of crabs, crucian carp, or hairtails, and they are greatly prized by consumers both domestically and abroad. Artificial propagation of shrimp is characterized by quick growth, short breeding periods, and high output. Usually, fry bred in May may be harvested in October. Our country's seacoast is dotted with islets, numerous harbors and bays, and broad flat beach areas where the bottom and the water are rich in nutrients, where floating organisms abound, and where naturally available food is abundant. Communes and brigades in coastal areas have made enclosures in the sea for use in the propagation of shrimp. Water catchments at saltworks and tidal streams can be also used for dual purposes. All these things provide extremely advantageous natural conditions for the development of artificial propagation of shrimp. Ever since 1973, our province has conducted experiments in the artificial propagation of shrimp, and after several years of experience, there have been some preliminary successes. Beginning this year, a transition has been made from the experimental stage to massive propagation.

Breeding of shrimp fry is the foundation for artificial propagation of shrimp. Since last winter and this spring, units engaged in marine propagation in this province have diligently summarized the lessons of

experience of the past several years in artificial shrimp breeding and have made further advances in artificial breeding of shrimp fry. Ably assisted by technicians from the Provincial Marine Products Institute, the shrimp units of Wenling County bred 5.4 million shrimp as of the first ten days of May--more than fivefold increase over the maximum amount of fry bred in a single year. On average, each cubic meter of water produced 14,700 shrimp fry, exceeding quotas for the propagation of fry by factory methods. They also set a record high output of 50,000 to 70,000 fry per unit of water volume. As a result of efforts by the broad masses of cadres, employees, and technicians, more than 10 million fry were bred. This figure was in excess of plan, it constituted a tenfold increase over last year, it created the highest level ever recorded. Right now every place throughout the province is giving extreme attention to the opportune time for continuing the breeding of shrimp; the estimate is that more than 2,000 mu of them can be bred.

9432
CSO: 4007

COST ACCOUNTING SYSTEM LOWERS PRODUCTION EXPENDITURES

Xiaoshan County

Hangzhou ZHEJIANG RIBAO in Chinese 11 Jul 80 p 1

[Article by Wang Lie [3076 3525] and Qian Zhixiang [3239 1807 4382]]

[Text] Last year, the No 2 Production Team of the Jianxin Production Brigade of Yiqiao Commune in Xiaoshan County instituted cost accounting for agricultural production, using a system of cost control of production by norms. As a result, grain yields amounted to 2,099 jin per mu, a 9.04-percent rise over the previous year; costs per jin of early rice declined from 4.2 fen to 3.26 fen; costs per jin of late crop rice declined from 4 fen to 3.95 fen; total expenditures were 2 percent lower than for the previous year; and total income showed an increase of 14.21 percent over the previous year. As a result of a conservation of expenditures and a decline in costs, individual income increased by 6.79 yuan. The production team became a model throughout the commune for high yields at low cost. The masses of commune members said happily that cost control of production by norms is a treasure, and the increased income and lower expenditures are things they cannot do without.

The actual way in which this production team instituted cost control of production by norms was as follows: At the beginning of the year, they formulated norms for the direct and indirect expenditures and the amount of labor to be used per individual item per mu. They based these formulations on an actual accounting of costs per individual item for the previous year, in a spirit of increased production at reduced cost. They required storekeepers to record the amount of materials consumed, work-point recorders to record figures for labor performed, and accountants to be responsible for making aggregate accountings. On the basis of these records, they made an analysis each month of the compilations and a comparison of norms for different kinds of production. They then published the accounting data right away so as to allay any questions in the minds of the masses, to seek out any loopholes, to ascertain the reasons for the size of the expenditures, and to suggest measures for improvement.

The institution of cost control by norms made the cadres and commune members learn about economic accounting and promoted frugality in commune management. Last year a boat used by the team in farming broke down and required repairs. The team's party committee made some calculations. If they sent it to the boatyard for repairs, it would cost 100 yuan, and it would take eight members of the labor force to get it there and bring it back. But if a boatwright were brought to the team to make repairs, and some unskilled laborers were sent to help out, they would only have to buy some boards and some tung oil and that would be the end of it. So they brought in a boastwright and were able to have the boat repaired at a cost of only 36.40 yuan. Expenditures for fertilizer and agricultural chemicals constitute a major cost in the production of commodities. Once the No 2 Production Team had instituted cost control by norms, they informed themselves about the scientific application of fertilizer, gave attention to the variety of crops planted in the previous season, paid heed to the residual fertility of the land, took into consideration how well the seedlings were growing, and were mindful of the kind of fertilizer to be used, using skillful fertilizer applications to obtain maximum results.

In using agricultural chemicals, they resorted to "two checks and three decisions." The entire team appointed special people to control insects and apply chemicals, with responsibility assigned to them as individuals. Last year, when the fourth generation of brown leafhoppers appeared in the late rice crop, the plant protection personnel made a careful examination and appraisal of field control. They then carefully applied the chemicals promptly and in the proper way to effect control. More than 50 yuan was saved this year over last in the control of the same kinds of diseases and insect pests.

Yuyao County

Hangzhou ZHEJIANG COUNTY RIBAO in Chinese 11 Jul 80 p 1

[Article by Li Zhen [7787 3791], Li Chun [4539 2504], Ao Zhong [2407 1813] and Jin Yao [6930 1031]]

[Text] Last year the high-yield low-cost advanced unit of Ningbo Prefecture, the San Brigade of Lanhai Commune in Yuyao County, had average per mu yields of 190 jin of ginned cotton, despite severe damage from a strong typhoon. Cost per jin of ginned cotton was only .20 yuan. Total annual agricultural costs for the entire brigade amounted to only 16.8 percent of total agricultural income. In view of the already fairly low agricultural costs, how can costs continue to decline and income continue to increase this year? The leadership of the brigade got a hint of how to do it from a comparison of two production teams. Last year the No 7 production team lay heavy emphasis on cost accounting, and production costs were only 15.6 percent. The No 1 production team had no cost accounting or control, and costs were consequently 2.2 percent higher than for the No 7 production team. These facts show that a great potential remains to be tapped in increasing production at reduced cost.

With the aid of the commune's party committee, the commune members were stimulated to formulate a system of cost control of production by norms, and cost control by norms was instituted throughout the brigade. Discussion among cadres and commune members resulted in each production brigade and production team formulating standards for this year's cost control by norms for each line of work on the basis of production expenditures over the past 3 years. They also stipulated that 20 percent of the saving in expenditures would be given as prizes, while exceeding the norms would require 10-percent indemnification. Under cost control by norms, expenditures are planned and both cadres and commune members pay mor attention to operating their abacuses in carrying out production. Everyone makes further efforts to tap the potential for increased output while reducing costs. In this years' prevention and control of diseases and insect pests, every team placed extremely heavy emphasis on sizing up the situation before taking action. When there were diseases or insect pests, they would act to control them, but when there were no outbreaks, they would not take control measures. As of now, for agricultural chemicals alone, the entire production brigade has spent 357 yuan less than for the same period last year, with a saving of .41 yuan per mu.

'RIBAO' Commentary

Hangzhou ZHEJIANG RIBAO in Chinese 11 Jul 80 p 1

[Texs] The comprehensive promotion of a system of cost control of production by norms for all items is a major means of reducing production costs, as well as an urgent task in the restructuring of administration and management in communes and production brigades.

Communes and brigades in rural villages should follow the principles of increased production and economy in their purchases of chemical fertilizer, agricultural chem cals, water and electricity, seeds, feeds and fodder, and agricultural implements, and in expenditures for the maintenance and repair of mechanical and electrical equipment and for administration and management. They should actively promote cost control by norms for every item as part of a system of responsibility for expenditures. There are many advantages to this method of operation. Since success with cost control by norms and the individual welfare of commune members are closely linked. [This method] is beneficial in arousing enthusiasm on the part of cadres and commune members to increase production and practice economy, in finding ways to economize on expenditures, in strengthening managers' sense of responsibility, and in being able to better assure the implementation of fiscal planning. At the same time, it promotes a close check by the masses on fiscal expenditures and cost control by norms.

Some comrades currently feel that the implementation of a system of cost control of production by norms in communes and production brigades in rural villages makes too high demands, and some even feel that this means bringing the methods of factory management to rural villages and that it will not work. Such ideas are clearly incorrect. Economizing is

the most fundamental principle of a socialist economy. Institution of economic accounting, conduct of economic analysis, concern about economic benefits, a constant increase in the labor productivity rate, and a reduction in production costs are all things that socialist enterprises strive to achieve. People's communes, inasmuch as they are economic organizations and collectively owned agricultural enterprises, are, of course, no exception. Additionally, experience has demonstrated that there is nothing mysterious at all about the system of cost control by norms, and that it can be applied not only in factories but in rural village communes and production brigades as well. Last year, all units throughout the province that instituted cost control by norms saw clear results in increased output, economies in expenditures, and increased income. Every place should check and study to make a conscientious summarization of this model experience.

In formulating cost controls by norms for every item, attention should be given from the outset to realities in the local area. In some, the various systems of responsibility can be combined or improved upon for the application of cost control by norms for various production expenditures. In production brigades and communes where management levels are low, cost controls by norms cannot be set up at the present time, but limitations on expenditures can. Some direct production expenses can be handled according to consumption norms or standards for expenditures, with the responsibility for some resting with the production teams and for others resting with individuals. There should be no remuneration when expenditures exceed agreed-upon norms, while economies should be rewarded.

Two Production Team Experiences

Hangzhou ZHEJIANG RIBAO in Chinese 12 Jul 80 p 1

[Article by Shen Xun [3088 6061] and Ren Haiqing [0117 3189 1987], "Why a 100 Percent Difference in Spring Grain Production Costs for Two Brigades With the Same Quality of Soil? An Account of How Li Yunlian [2621 0061 6647], brigade leader of the Liberation No 4 Production Team, and Accountant Li Yunkang [2621 0061 1660] Went to the Yongfeng No 9 Brigade To Collect Experiences"]

[Text] "Just how much money does it cost to produce 1 jin of spring grain?" For the past several days, the cadres and commune members of the No 4 production team of Jiefang Productio Brigade at the Changsha Commune in Xiaoxhan County have been intensely discussing this question, in the context of a summarization of experiences with a bumper spring grain harvest.

The No 4 production team of the Jiefang Brigade grew wheat on 44.2 mu, harvesting 602 jin per mu at a cost of 49.86 yuan per mu, or a cost of .0828 yuan per jin. Was this a high cost or a low cost? And are there any gaps that can be plugged? Some said it was high, while others said the cost was unbeatable. Then, a comrade from the Xiaoshan County People's

Bank told them that at the No 9 production team of the Yongfeng Production Brigade in Nanyang Commune, wheat yields of 864.5 jin per mu from 34 my had cost 35.92 yuan per mu, or .0418 yuan per jin of wheat harvested.

"They both have sandy soil, and they both grew spring grain. Why was the cost per jin of wheat twice as high at one brigade as at the other? There is a lot to be learned about economy in farming costs!" Li Yunlian, head of the No 4 production team, had a talk with accountant Li Yunkang, and they decided to go to the No 9 production team to find out what had happened.

On 26 June, Li Yunlian and Li Yunkang got on their bicycles and pedaled 20 li to the No 9 production team of Yongfeng Brigade.

Once Gao Fengyu [7559 7364 3558], accountant at the Yongfeng No 9 production team, learned the reason for their arrival, he warmly explained the situation to them.

"Increased output and reduced cost are like two oars on the same boat. Only when they are coordinated and pulled at the same time can the boat move at a fast speed."

"Right, right! We did not pull our two oars properly," Li Yunlian said humbly.

Old Gao said: "One thing we have learned from experience is the need for accounting when it comes to costs and the need for cost control by norms. We have a cost accountant in our team who writes down very precisely just how many seeds were used per my of wheat, how much fertilizer, and how much chemicals. Costs are also regularly published for the masses in order to launch a campaign of economic analysis and to discover gaps that can be plugged."

When the comrades from the Jiefeng No 4 production team heard this, they were very much inspired. Accountant Li Yunkang said: "At the Yongfeng No 9 production team, cost expenditures are calculated in advance and there is careful calculation and strict budgeting. We, however, openhanded, making the expenditures and then calculating them later. This caused us losses."

Yongfeng No 9 production team accountant Gao Fengyu continued by saying, that a system of personal responsibility had been established for the application of fertilizer, control of insect pests, and maintenance of farm equipment. A system of personal responsibility links economies and waste in production expenditures with the personal welfare of every individual. For this reason, everybody tries to figure out ways to lower farming costs. When fertilizer is used on wheat fields, care should be given to its scientific application to increase its effectiveness. The condition of the seedlings, the soil, and the weather must all be taken into account, with no "one stroke solution to all problems."

When seeds are sown for the spring grain crop, a covering of phosphorous mixed the cake fertilizer should be applied to the soil, and during the year the wheatfields should be troughed, with chemical fertilizer being worked deep into the soil. This saves on fertilizer and gives long-term effectiveness. Prior to the practice of the system of individual responsibility, when the authorities issued notices of disease and insect infestations, the production teams would take action in a piecemeal fashion, with some acting to control them and others not. Once the chemicals were sprayed, the job was considered finished. This resulted in a lot of chemicals being used and high costs. Now, with the advent of a system of individual responsibility, plant protection personnel have to do a good job of prevention and control of diseases and insect pests and to conscientiously render an accounting of costs. If they use a liang of chemical dust or a spoonful of liquid chemicals, they have to account for it. In May of this year, plant protection personnel discovered an infestation of young insects in the wheatfields which, if left untended, would require that the entire area be sprayed. But this time they carefully inspected the wheat plants in every field. Where there were insects, they sprayed; where there were none, they did not. Where there were a lot of insects, they used more chemicals. In this way they economized on the use of chemicals, with good results.

"In the use of chemicals and of fertilizer, cost control by norms is used. This is good experience," said Jiefang No 4 production team accountant Li Yunkang. "Our wheat production costs have been high because we did not go in for control by norms. Chemical fertilizer and barnyard fertilizer "dribbled away," and "dribbled away," being applied from New Year's time right up until "Qingming" [5 April]. Your fertilizer costs for wheat were only 22.55 yuan per mu, while ours were as high as 35.35 yuan."

"If you want to be prosperous, you have to make an effort to increase output and reduce costs." Li Yunlian, head of the Jiefang No 4 production team, continued. He added: "We shall study the high output, low cost experiences of Yongfend No 9 production team in wheat production, and we shall apply them to the early and late rice crop to get an increase in output and low costs!"

With feelings of joy, the team leader and the accountant mounted their bicycles and sped back.

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NINGBO PREFECTURE HYBRID CORN

Hangzhou ZHEJIANG RIBAO in Chinese 8 Jul 80 p 1

[Article by Wang Weiguo [3769 3634 0948] and Zhang Caining [1728 2088 1380]: "Heartening Growth of More than 30,000 Mu of Hybrid Corn; Ningbo Prefecture Gives Diligent Attention to New Three Crop Dryland Production"]

[Text] Drylands grain leaders in Ningbo Prefecture have recently turned to helping places where hybrid corn is being promoted and places in which there has been an expansion of a new three dryland crop system so that they can get a good grip on key production links in order that a heartening advance will occur in dryland grain output throughout the entire prefecture. This year's expanded cultivation of 36,700 mu of hybrid corn in this prefecture amounts to 85 percent of the corn growing area, and represents a 4.6-fold increase over last year. The area in which sweet potatoes have been intercropped with corn amounts to 18,950 mu, a more than twofold increase over last year. However, because of the numerous new areas, some new problems have arisen in the cultivation pattern and in production techniques, most prominent of which is that some communes and brigades are still unable to intercrop hybrid spring corn on time, and though some communes and brigades have succeeded in this intercropping, they are not planting closely enough and the number of plants is inadequate. In light of these problems, leading members in each locale went individually to different areas to inspect and study, coming up with different solutions. In Ninghai County, the masses in Chalu District are accustomed to growing summer corn and do not reserve a place for winter plantings of it. Here, most communes and brigades did not intercrop spring corn. So they tried out a little as a sample in conjunction with the district agricultural technology station and cadres from the communes and brigades, and it quickly spread. During the first year, this district intercropped 1,266 mu of hybrid spring corn with sweet potatoes. After Xiangshan County had intercropped hybrid spring corn with nearly 10,000 mu of sweet potatoes, it followed the example of some communes and brigades susceptible to autumn drought, using the water or dry crop rotation pattern of "going the water route where there was water, and going the dry route where there was not," designating 10,000 mu of fields dependent on rainfall for use in

planting either autumn soybeans or hybrid autumn corn after the early rice crop was harvested.

In consideration of the many new areas and the poor technical foundation, the authorities concerned invited nine corn experts with a lot of experience from Dongyang and Dinghai to conduct technical demonstrations add technical instruction at new areas in Xiangshan, Ninghai, and Yuyao, and to organize on site exchanges of experiences. In early June, the prefecture again convened an on-site exchange conference for mid-season drylands grain management for the entire prefecture in order to study and exchange information about strong applications of fertilizer in addition to the applications made to promote seedling growth and to enhance stalk strength, and about crucial measures for the prevention and control of European corn borers. Right now the growth of the hybrid corn is heartening.

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FINANCIAL SUPPORT TO AGRICULTURE

Hangzhou ZHEJIANG RIBAO in Chinese 3 Jul 80 p 1

[Article from Provincial Finance Department Office; "Try to Increase Effectiveness of Agricultural Aid Funds; Provincewide Agricultural Finance Work Conference Requests All Echelons of Public Finance to Manage and Use Funds Well, and to Strengthen Support to Agriculture"]

[Text] All echelons of public finance departments throughout the province are currently facing a new problem, namely the strengthening of financial aid to agriculture, and good management and good use of agricultural aid funds to improve the effectiveness of these funds. This was a proposal in the Provincewide Agricultural Finance Work Conference, which was recently convened by the Provincial Finance Department.

Currently 80 percent of financial aid funds for the support of agriculture in our province are used to help communes and brigades develop production. Twenty percent is used in agricultural enterprises and businesses for the development of productive endeavors. In order to increase the effective use of agricultural support funds, it is necessary, first of all, to be realistic and provide support on the basis of the advantageous natural resources of each local area. This means emphasizing support to agriculture where agriculture is paramount, support to forestry where forestry is paramount, support to cattle raising where cattle raising is paramount, and support to fisheries where fisheries are paramount. Whatever problems are the key to increased output, increased income and increased contributions, these are the problems for which support is necessary in order to find a solution. However, no matter what is being supported, it is always necessary to pay attention to planned, phased, and grouped action to benefit from the concentration of forces so that limited funds will really be used where they can do the most good, bringing things to fruition one at a time, observing the results of one thing at a time, and thereby conforming to the requirements for more, faster, better, and more economically.

Still another aspect of more effective use of agricultural support funds is reform of the financial system, changing the past practice whereby funds

were used to the limit of the amount approved at the time of their request, and losses were made up in full by higher authority in a method in which "everybody ate out of a common pot." A system of economic responsibility in which authorities and responsibilities are combined has to be established in which good and bad effectiveness in the use of funds is clear, and in which the economic interests of the units using the money are clear. In the case of funds for the support of communes and brigades in the development of production, the state should sign economic contracts of different kinds with the communes and brigades receiving the support and make on site inspections on the basis of the provisions of the contracts. For businesses owned by all the people, it should institute budget responsibility with budget quotas being fixed once annually, any excess being retained and any overruns not being made up. For state owned farm and cattle raising businesses, retention of profits should be instituted with losses being compensated for fixed amounts.

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BRIEFS

NEW COTTON AREA--Our province's newly developed cotton region, Pujiang County, has conscientiously applied the system of management responsibility in cottonfields, has given vigorous attention to management of the breeding of cotton seedlings, and has made a first application of fertilizer at cultivation time on 10,000 mu of cottonfields throughout the county. The cotton is growing very well. Yields of ginned cotton from more than 7,000 mu in this county last year amounted to 150 jin per mu, the best in the entire province. This year the area planted to cotton throughout the county has been expanded by more than 3,000 mu over last year's area, for a total of 10,000 mu. Because of low temperatures and much rainfall during the earlier period, cotton has sprouted slowly in numerous cottonfields, many plants have died, and growth has been poor. By way of upgrading growth care during the cotton-sprouting period, communes and brigades in cotton-growing areas have aroused the masses to conscientiously summarize the lessons of experience of last year's cotton production. They have set up and improved upon the system of responsibility for conttonfield management everywhere and have aroused the enthusiasm of cotton farmers. For example, at the No 10 Feilun Brigade in Yantou Commune, management during the cotton-sprouting period consisted of total responsibility for work in small sections, the setting of quotas for individual fields, assignment of responsibility to individuals, uniform quality, and checking upon delivery with grading being recorded. Only one and one-half days were required to cultivate 14.5 mu and to transplant seedlings to fill in bare spaces, with the cottonfields throughout the entire brigade ending up weedfree and with evenly spaced seedlings. Every commune and brigade in the cotton-growing regions actively engaged in rearranging plants that were too close together or too far apart, and transplanting seedlings where necessary to assure close planting of cotton seedlings. For each mu, between 5,000 and 6,000 plants had to be added so that 81 production teams with serious shortages of seedlings would have complete and uniform plantings of seedlings. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 18 Jun 80 p 4]

OUTPUT OF SPRING SILK COCOONS--The major silk cocoon production region of our province, Jiaxing Prefecture, this year had the highest per unit yields and the highest total production of spring cocoons in history. Cocoon quality was generally half a grade higher than last year. As of the 9th of this month, a total of more than 440,000 dan of spring cocoons had been procured by the state throughout the entire prefecture--an increase of more than 30,000 dan over last year. When cocoons retained by commune members are added to this figure, total output may reach more than 480,000 dan, a 10 percent increase in output over last year. In order to obtain a high output of spring cocoons, every locale intensified care of its mulberry groves. The spring crop of leaves from the 810,000 mu of mulberry groves throughout the prefecture showed an increase of more than 10 percent over last year. In addition to the feeding of the spring silkworms, every locale promoted technical measures for the raising of silkworms, such as growing small silkworms in a room heated by a brick stove, growing large silkworms and cutworms on mulberry twigs, and uncongested breeding and growing of silkworms to promote this year's superior quality and high output of spring cocoons. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 12 Jun 80 p 1]

COMMUNE, BRIGADE INDUSTRY--Total output value during the first 6 months of this year for commune and brigade industry in our province amounted to 1.634 billion yuan, an increase of more than 40 percent over the same period last year and a completion of 51.1 percent of plan. In slightly more than half the time, more than half the quota has been completed. During the present year, commune and brigade industry everywhere throughout the province has faced a new situation brought about by readjustments in the national economy. Through a combination of adjustments to plans and adjustments to markets, and by adjusting, changing, stopping, and combining in existing metals and machinery industries, the needs of plant production and marketing have been met. Additionally, by using the various advantages peculiar to locales, and adapting methods to local situations for the development of processing in agricultural sideline products, handicrafts, textiles, knit goods, and construction materials industries, a new situation has been brought into existence for commune and brigade industries. As a result of active measures taken in the course of readjustment in commune and brigade industries in Hangzhou Prefecture, plus a straightening out of supply, production, and marketing channels, output value for the first half of this year was 66.9 percent greater than for the same period last year. [Text] Hangzhou ZHEJIANG RIBAO in Chinese 3 Aug 80 p 1] 9432

ANIMAL HUSBANDRY PRODUCTION--Taishun County in Zhejiang Province promotes animal husbandry production with good results. As of the end of June 1980, the county had some 90,000 head of hogs, 13,800 head of oxen and 22,000 head of sheep at sties. [Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 31 Aug 80 OW]

LIVE HOG PROCUREMENT--According to the China National Foodstuffs Corporation's Monthly Statistical Report of 3 June, both the quantity of slaughter hogs purchased by the state and the quantity of slaughter hogs purchased by the state and the quantity of slaughter hogs sold in our province by the state (including pork products) during the first 5 months of this year showed an increase of about 25 percent. Our province stood first in both categories. The expansion in pork sales prompted the state to further purchases of live hogs to support further slaughter hog production. As of 20 May, slaughter hogs on the hoof throughout the province numbered 14.95 million, an increase of 5 percent over the same period last year. The situation in which state purchases of slaughter hogs continues greater that state sales is currently still quite glaring, and provincial authorities concerned are continuing efforts to promote sales so that procurement can increase in order to maintain the enthusiasm of commune members for hog raising and to promote the stable development of hog production. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 30 Jun 80 p 1] 9432

JOINT ENTERPRISE COMPANY ESTABLISHED--Following approval by the Provincial People's Government, arrangements were recently made, and the Zhejiang Provincial Farmland Reclamation Agricultural, Industrial and Commercial Joint Enterprise Company was formally established. The company will look after production, processing, and marketing in a single chain on state-owned farm reclamation sites. It is a socialist economic organization owned by all the people that is comprehensively operated for agriculture, industry, and commerce. Its main task is complete fulfillment or over-fulfillment of state production plans, the improvement of the labor productivity rate in agriculture, the commodity rate for agricultural commodities, and the utilization rate for funds in order to provide the state with more agricultural sideline products and industrial sideline products, and to play an exemplary role in the agricultural modernization process. The company will use economic methods, and conclude contracts to establish economic relationships with agricultural reclamation sites and with joint agricultural, industrial, and commercial enterprises in every prefecture, municipality, and county. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 1 Jul 80 p 1] 9432

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END

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No. 103

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GRAIN PROCUREMENT REDUCED

Jinan DAZHONG RIBAO in Chinese 20 Aug 80 p 4

[Report: "Grain Taxation and Purchase in Rural Areas Were Reduced by 5.5 Billion Jin Last Year."]

[Text] Beijing, August 29 (XINHUA)--According to information obtained by reporters from departments concerned, the State reduced through exemptions the grain taxation and purchase quotas for areas with comparatively heavy grain burdens or with difficulties by 5.5 billion jin during the grain year that ran from April 1979 to the end of March 1980. In addition to strengthened financial and material support for agriculture and the big increase in procurement prices of farm products, this is another important measure taken by the State to let the peasants recuperate further and build up strength.

In the past two years, through the implementation of the Party's rural economic policies and because of normal weather conditions, our country's farm production developed rather rapidly, the national grain output registered an increase of 98 billion jin in 1978 and 1979, but the amount of grain sold by production teams to the State rose by only 16 billion jin. More than 80 billion jin of the grain from the increased output of these 2 years was left for the peasants, thus improving the grain situation in rural areas. The number of production teams in which grain was purchased and also sold [by the State] was reduced by 310,000 in 1978 and was further reduced by 140,000 in 1979. All production teams with relatively heavy grain procurement tasks originally were relieved of some of their burdens.

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RESEARCH ON FARM MECHANIZATION NEEDED

Beijing GUANGMING RIBAO in Chinese 17 Jul 80 p 2

[Article by Zhang Huwen [1728 1920 2429] and Zhu Peiwei [2612 1014 1983]: "Need for Greater Attention and Strengthening of Scientific Research on Agricultural Mechanization"]

[Excerpts] Research on the mechanization of agriculture is an exploratory task on the direct use of farm machines in the agricultural production process for increased farm yields. It differs from research on the design and manufacture of farm machinery products, and is more closely related to farm production. For a long time there has been a tendency in our country toward emphasizing the mechanic while slighting the "-ization" with regard to farm mechanization research work. For a time, virtually no one concerned himself with the "-ization" in research much less having a strong and vigorous nationwide research organization to take this work in hand. Thus, though there has been a steady increase in China's farm machinery, this has created a situation of no advance in the level of farm mechanization, which is the main reason for poor economic benefits from it. A comparison of 1979 with 1965 shows that the number of large and medium-size tractors in China increased 8 fold, and the number of small-size tractors increased 421 fold while the area farmed by machinery increased only 1.7 fold. In some provinces there has even been a situation in which the number of tractors steadily increased while conversely, the area farmed by machines declined. In nationwide terms, as of the end of 1979, the machine-cultivated area amounted to only 42 percent of the total cultivated area; the area sown by machines amounted to only 13 percent of the drylands crop area sown; and the machine-harvested area amounted to only 2.6 percent of the area sown to grain crops. In the case of rice transplanting machines, during the 1960's, the pace of research in China and Japan was about the same. In 1970, the extent of mechanized rice transplanting in Japan was only 3 percent, but it now stands at 80 percent, while in China last year the area of machine-transplanted rice amounted to less than 4 million mu, or only 0.7 percent of the area of paddy fields transplanted. These circumstances vividly demonstrate that a large

amount of farm machinery does not equate to an automatic increase in the level of farm mechanization, but that there is a need for further research in farm mechanization to settle a series of problems such as the course of China's farm mechanization, the compatibility of farm mechanization and farm technology, and a rational application of farm machinery. Only then can farm machinery provide their full advantages for agricultural production and make a contribution to increased output and increased income.

As a result of the gradual appreciation in recent years of the importance of farm mechanization research, work in this sphere has begun to show some progress. Nowadays, in addition to the two farm mechanization institutes directly under the jurisdiction of the Ministry of Agricultural Administration, which have been revived, in numerous provinces, municipalities, and autonomous regions throughout the country, either agricultural mechanization institutes or laboratories have been established, and they have begun research on some problems having to do with the "-ization" aspect. In some places, agricultural research organizations have taken the initiative to coordinate with farm machinery research units to set up farm mechanization research test sites from experiences in production. These have had heartening results. For example, during the past 2 years, the Doudian Commune in Beijing's suburban Fangshan County, with the help of the Beijing Municipal Agricultural Institute, has changed the farming system of three plantings and three harvests, which is not suited to mechanized operations, into two crop flat seeding, which is suitable for mechanization. This, plus the breeding of early ripening varieties, has brought steady large-scale increased output from the autumn grain crop. Output during the first year increased from 1.65 million jin to more than 2.4 million jin. In the second year there was another increase to more than 3.4 million jin. This example demonstrates that if only production realities are probed and farm machinery and agricultural research units linked to strengthen research in the mechanization of agriculture, the potential for increased yields in agriculture will be great.

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PROGRESS IN FORECASTING CROP DISEASES, INSECT PESTS REPORTED

Beijing RENMIN RIBAO in Chinese 11 Aug 80 p 2

[Article: "Growth of China's Crop Disease and Insect Pest Forecasting; Timely Issuance of Forecasts Has Been Remarkably Effective for Prevention and Control Work Everywhere"]

[Text] China's crop disease and insect pest forecasting and reporting work has seen great development, with the virtual formation of a disease and insect pest forecasting network extending from top to bottom. Now the Ministry of Agriculture has set up a Crop Disease and Insect Pest Forecasting and Reporting Main Station. One after another, every province, municipality, and autonomous region has also set up disease and insect pest forecasting stations or sections. Two-thirds of the prefectures and counties have set up a total of more than 1,700 prefectural or county disease and insect pest forecasting stations. At the grassroots level, communes, production brigades and production teams have set up countless disease and insect pest forecasting points manned by peasant forecasting personnel.

The object of China's crop disease and insect pest forecasting today is more than 30 major diseases and insect pests afflicting the entire country as well as more than 40 localized diseases and insect pests. Thanks to timely issuance of forecasts, prevention and control work has been promoted everywhere. This summer's outbreak of summer locusts was forecast 3 months before it happened, which meant that the area afflicted by summer locusts along lake shores, coastal areas and inland as well as the density of insects was less than last year. Along the shores of the Yellow River in the Shandong-Henan border area, outbreaks will be severe. Acting on the forecasts, every jurisdiction revised its prevention plans. Some prefectures shortened their control areas while others intensified prevention work. In locust areas both north and south, only 10 days' time was needed for a fairly complete eradication of locust pests. Another example was the sudden outbreak of meadowland snout moth's larva. As early as the first 10 days of June this year, the possibility of a large outbreak was forecast and the main forecasting station promptly issued an urgent forecast report. The Nei Mongol Autonomous Region

People's Government required every jurisdiction to strengthen leadership and disbursed 1 million yuan of special funds to wipe out the insects. The Heilongjiang Provincial People's Government called upon every prefecture and county to establish urgently an Insect Eradication Command. Thanks to the timely forecasting, preparations for prevention work were complete and results were outstanding.

With the help of posts and telecommunications units throughout the country, forecasting stations have made widespread use of the "Agricultural Disease and Insect Forecasting Telecommunications Code" to increase the speed of transmittal of insect intelligence.

Every jurisdiction has also given heavy attention to the technical training of a forecasting corps. In recent years, quite a few cadres and technicians of forecasting stations have been commended as advanced workers by provinces, prefectures and counties, and some have attended the All-China Science Conference.

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STATE AQUATIC PRODUCTS BUREAU OFFICIAL INTERVIEWED

Hong Kong CHING-CHI TAO-PAO in Chinese 6 Aug 80 pp 2-6

[Article: "Deputy Director of State Aquatic Products Bureau Cong Ziming [0654 1311 2494] Replies to Reporter's Question About the Present and Future of China's Fishing Industry Production"]

[Text] Recently a correspondent from this newspaper interviewed the deputy director of the State Aquatic Products Bureau, Cong Ziming [0654 1311 2494]. He made the following replies about measures that are being taken with regard to China's aquatic production during the period of readjustment of the national economy in order to advance the fishing industry with all possible speed, as well as about the current situation and future development of production in the fishing industry.

Question: Please discuss the problems in aquatic products that require solution first, during the period of readjustment of the national economy.

Answer: In accordance with the program of the central government for readjustment, restructuring, consolidation and improvement of the national economy and the integration of aquatic products, vigorous efforts are being made during the period of readjustment to protect aquatic product resources, actively develop breeding, readjust inshore operations, develop deep-sea fishing grounds, adopt advanced technology, strengthen scientific management, improve product quality and increase market supplies. A year's experience has demonstrated that this course is in line with realities in the fishing industry.

In the 30 years since the founding of the People's Republic, our fishing industry has made great accomplishments. However, as a result of the interference and destruction caused by Lin Biao and the "gang of four," as well as weaknesses in our own work, aquatic product resources have sustained serious damage. At the present time, aquatic products in our country are in a backward state, with production levels very low and far from meeting the needs or steady increases required for the development of the entire national economy and the standard of living of the people. They have become a weak link in the national economy. Consequently, ever since the Third Plenary Session of the 11th Party Central Committee, the

since the Third Plenary Session of the 11th Party Central Committee, the Party Central Committee and the State Council have adopted a series of measures to strengthen production in the fishing industry, requiring that in the formulation of plans, the study of problems, and the allocation of manpower, materials and financial resources, every locale and department must take fishing industry production into consideration and, while making fullest use of the existing foundation, strive to tap unused potential, to increase mechanization of the fishing industry and the machinery for cold storage processing to protect freshness, and to increase support for aquatic products work.

Question: What exactly has been done and what is planned for the future to hasten the development of the fishing industry?

Answer: First of all, in order to protect aquatic products resources, the Chinese Government last year promulgated the "Aquatic Products Resources Breeding Protection Act." It reiterated proscribed fishing grounds, banned fishing at certain times and set up a fishing industry permit system. It prohibited indiscriminate fishing for spawning fish and young fish. Limits have been placed on catches of mature small fish and on the closeness of the mesh in shrimp nets. Fishing is permitted only at prescribed times and in prescribed areas. Violators will be punished in accordance with the seriousness of their violations.

Second, in order to protect inshore resources, we have acted on the advice of aquatic products experts, who have proposed stringent curtailment of the intensity of fishing in inshore areas. It is planned that such fishing will be kept at a fixed level over the next 3 to 5 years, and that existing fishing craft be actively organized for the development of ocean fishing farther out.

Third, there is a rapid growing understanding of the basic situation in deep-sea resources even while we are protecting inshore resources. In recent years, China's aquatic products scientists have launched an investigation into aquatic product resources. In their investigation of deep-sea areas of the Eastern Sea, they have proposed 20 fishing grounds of from 80 to 120 meters in depth, and they have collected 345 kinds of deep-sea fish. Investigation of fishing area resources over a 75,000-square-kilometer deep-sea area on the continental shelf turned up deep-water soft fish and adipose dipterous pomfret resources.

Fourth, there has been an increase in the state procurement price for aquatic products. Last year the state increased by 23 percent the price paid for aquatic products. This aroused the enthusiasm of the fishermen and increased their income. Such a large increase in the purchase price of aquatic products has been unprecedented since the founding of the People's Republic.

Fifth, there has been a vigorous development of both ocean and freshwater breeding. Some ocean-breeding bases have been established in the inshore

areas of Bohai and the Eastern Sea for the propagation of kelp, agar, shrimp, mussels and mother-of-pearl. Commercial fishing bases have been set up for freshwater breeding in 78 countries in 11 provinces, including Hunan, Hubei, Zhejiang and Jiangsu, and in 1979 the area put into production for the propagation of fish amounted to 16,000 mu, producing more than 54 million tons of fish. During the past 2 years, more than 250,000 mu of breeding ponds have been set up one after another, and approximately 150,000 mu of breeding ponds are currently under construction. Crib propagation of fish and factorized fishbreeding have also been launched.

Sixth, we have seen the test establishment of combined enterprises for fisheries, industry and commerce. Once such combined enterprises have fulfilled their quotas for delivery of aquatic products to the state, they will be able to process and sell their own aquatic products. This will permit the rapid accumulation of increased amounts of funds by communes and brigades in the fishing industry and will change the past practice whereby aquatic products meant solely the production of fish.

Seventh, a number of aquatic products cold storage facilities have been established to improve the freshness of aquatic products. Our country's base for cold storage of aquatic products has been extremely weak. By the end of the First Five-Year Plan, total cold storage capacity amounted to only somewhat more than 11,000 tons, and as of 1972 it was only somewhat over 70,000 tons. During the past several years, the quantity of cold storage for aquatic products has seen a much greater increase. Currently, in coastal provinces and municipalities, there are more than 183 cold storage plants with a cold-storage capacity of 160,000 tons and a daily icemaking capacity of 7,100 tons. Some cold storage has been also built in inland areas. The annual production by these cold storage plants of more than 1 million tons of ice plays a definite role in preserving the freshness of aquatic products, as fishing boats carry the ice out to sea.

Eighth, we have explored the possible development of fishbreeding endeavors in the Yellow River basin. Since the establishment of the People's Republic, a fairly great development of the freshwater fishbreeding industry has taken place in the Yangtze and Pearl River basins, and the freshwater fish breeding industry has also begun to develop in the Heilongjiang River basin in the northeast. In the Yellow River basin, the second greatest river in our country, however, development of a freshwater fishbreeding industry has not amounted to much. Therefore, it is necessary to investigate and study the test establishment of various centralized integrated freshwater commodity bases, and to explore avenues for the development of freshwater fish propagation in the Yellow River basin, in an effort to have greater development during the 1980's.

Ninth, there has been an intensification of fishing industry research work and training of scientists and technicians. In order to increase the level of our country's scientific research and hasten the spread of the results of research, we have revived some aquatic product research organizations, as needed, in a nationwide pattern of distribution. These are

now being readjusted and restructured in order to change points where research work and development of the fishing industry are not in conformity. At Lake Tai, in Jiangsu Province, we have set up the Lake Tai Aquatic Products Reproduction Base, and we are preparing to set up a Bohai Aquatic Products Reproduction Base in Bohai. In an effort to concentrate our forces to restructure existing educational institutions concerned with aquatic products, our country now has 17 aquatic products institutions of higher learning and secondary technical schools, as well as some others set up in aquatic product organizations and special industries. Additionally, each locale has formulated rules and regulations and adopted various methods of incremental rotational training of aquatic products cadres and fishing industry technicians so as to increase the level of technology and management.

Question: Please tell us about the situation in the fishing industry this year and for its future development.

Answer: In order to protect inshore resources, we readjusted operations last year, reducing the amount of trawling, and resorting to more seining, drift netting and angling. This hurt some production, and catches were over 340,000 tons less than they were in 1978, but there was an increase in the proportion of economic types of fish, a decrease in the number of miscellaneous small fish, an increase in the quality of fish and an increase over last year in the number of fish that met standards for export. Output of freshwater fish nationwide last year reached 1.116 million tons--an increase of 57,000 tons over 1978; this was a 5.4-percent increase and the highest level ever recorded. This trend generally met the requirements for protection of resources, development of breeding and increase in quality.

While keeping protection of aquatic product resources in mind, ocean catches this year remained generally stable at last year's levels. During the spring and winter fishing seasons, the fishing industry scored bumper harvests in the Tongking Gulf of the Guangxi Autonomous District and in the Eastern Sea opposite Zhejiang Province. For example, in Zhejiang Province, which is the principal region in our country for hairtails, 285,000 tons of hairtails were caught during the winter fishing season, a 30-percent increase over last year's winter fishing season catch. Hairtails accounted for the largest catches during the winter fishing season in Zhejiang Province, with catches amounting to 40 percent of the total fish caught throughout the province. Furthermore, the quality was better and the individual weight of the hairtails was higher. Mass enthusiasm for the breeding of freshwater fish was very high, and output was quite good.

The natural conditions for the development of aquatic products in our country are very good. We have a long coastline, and waterplants in inland waters are plentiful. Additionally, during the past few years a lot of water-conservancy projects and catchments have been built. Since

the founding of the People's Republic, aquatic product endeavors have seen rather great development. At the moment, more than 70 percent of all sea catches come from mechanized fishing craft. Large fishing industry bases have been built in more than 10 locations along the seacoast, and medium and small fishing ports have been built in more than 60 places. The annual fishing boat construction capacity is more than 150 craft and more than 1,000 mechanized junks.

The freshwater breeding area is now more than 10 times what it was immediately following liberation, amounting to more than 40 million mu. This is 54 percent of the total fishbreeding area of somewhat more than 75 million mu, and freshwater fish breeding here amounts to 70 percent of the total. Though great growth in both ocean and freshwater breeding has taken place since liberation, the untapped potential for both is still very great.

In terms of the collective fishing industry, there are currently more than 310 fishing communes throughout the country, and more than 17,000 fishing production teams with a labor force of more than 2.6 million persons engaged in fishing. There are more than 3,000 state-owned aquatic product enterprises with more than 200,000 people in them.

There are more than 10 directly subordinate aquatic product research units, with a total of more than 2,000 technicians. There are more than 20 aquatic product institutions of higher learning and technical secondary schools with more than 1,500 teachers and more than 6,000 students. In terms of both manpower resources and untapped potential, development prospects are very great.

Along with progress in the readjustment of our country's national economy has come the steady adoption of measures to strengthen the fishing industry. Every trade and profession have rendered vigorous support to the fishing industry. All we need do is conscientiously implement the party's and the State Council's work programs and policies for rural villages, do a better job of acting in accordance with objective natural laws and economic laws, give full play to the superiority of our country's aquatic products, and then, through readjustment and restructuring, our aquatic product endeavors will be able to attain stable and continuous development.

Question: Please tell us about the export of aquatic products.

Answer: In recent years our country has set up 10 aquatic product bases in Guangdong, Zhejiang, Fujian, Jiangsu, Shandong, Hebei and Guangxi for the breeding of shrimp, pond fish, oysters, eels and scallops. These aquatic product bases have played an active role in assuring stable quality, markets, suitability for marketing and a source of supply for the export of aquatic products. Last year the increase in our country's exports of aquatic products brought in one-third more foreign exchange

than in 1978, creating the highest level in history. The principal aquatic products exported were pond fish, miscellaneous live fish, shrimp, Pacific herring, jellyfish skin and eels.

In order further to develop the export and import trade in aquatic products, the state and the regions have rendered assistance this year in many areas of endeavor so as gradually to have aquatic products under a unified plan that will enjoy good sales in international markets and bring in a high rate of foreign exchange. As our country's aquatic products efforts grow and develop in the future, prospects for aquatic product exports will become wider and wider.

Our country's marine products [situation] is still comparatively backward, and in order to hasten growth of our country's aquatic products endeavors, we still have to learn from foreign countries and import advanced technology and advanced equipment. We also welcome various forms of joint capital ventures from every country and the development of economic and technical cooperation with us.

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USE OF AZOLLA AS FERTILIZER INCREASING

Beijing RENMIN RIBAO in Chinese 4 Jun 80 p 4

[Article by Liu Zhongzhu [0491 0022 2691]: "Azolla--Effective Source of Nitrogen for Paddy Fields"]

[Text] Azolla (or red duckweed as it is called) is an aquatic pteridophyte. China has extremely abundant azolla resources, and the cultivation of azolla has a long history. Following Liberation, a systematic study of azolla was undertaken, and during the last 2 years the introduction of fine green duckweed has given impetus to the development of duckweed cultivation. Red duckweed is a source of nitrogen for paddy fields that has received more and more serious attention.

In nature, azolla grows together with cordate houttuynia (Houttuynia cordata). The cordate houttuynia depends on the carbon supplied by the azolla to fix nitrogen from the air, which the cordate houttuynia uses. Cordate houttuynia that grows together with azolla possesses a nitrogen fixing capacity that is more than 10 times greater than that of cordate houttuynia when grown independently. Azolla possesses a strong nitrogen fixing capacity; it grows rapidly; and its output is high. Air-dried azolla's nitrogen content is between 2 and 3 percent, the maximum being around 4 percent. When conditions are right, azolla can double its growth within 3 or 4 days. For every mu of azolla, which amounts to from 600 to 800 jin in the springtime, more than 2,000 jin of fresh azolla may be harvested within 15 to 20 days. (In the case of fine green duckweed, it can run to from 5,000 to 6,000 jin.) Its nitrogen content is equal to that of about 30 jin of ammonium sulfate. It is consequently called a "natural chemical plant." When azolla is put on paddy fields, a 10 to 20 percent increase in paddy rice usually results, and on infertile fields in mountainous regions, a 20 to 30 percent increase may result.

Azolla also contains phosphorous, potassium, and abundant organic material. It is noticeably more effective than Chinese milk vetch in transforming soil. One season's growth of azolla increases the organic matter on the surface layer of paddy fields by about 0.3 percent.

Air-dried azolla contains about 20 percent crude protein, about 20 percent crude fat, and about 10 percent crude fiber. It makes a fine green feed, which is used in some places to feed hogs, chickens, ducks and fish with pretty good results.

Additionally, azolla is very effective in reducing pollution, in improving the quality of water and in the production of methane gas.

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BRIEFS

NORTHWEST HOG CONFERENCE--The Northwest Hog Breeding Scientific Research Coordination Conference was recently held in Pingliang County, Gansu Province. The participants summed up and exchanged results of scientific research on improving hog strains and set forth the 1980-1982 plan for conducting scientific research coordination among the five provinces in Northwest China. [SK120727 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 10 Sep 80]

CSO: 4007

BEIJING VEGETABLE SITUATION IMPROVED IN JULY

Beijing BEIJING RIBAO in Chinese 26 Jul 80 p 1

[Article by Wu Jingchong [0702 2529 1504]: "Vegetable Farmers in Beijing Suburbs Persevere in Combating Calamities To Reap a good Harvest in Spring-Sown Vegetables; Change for the Better in the Supply of Vegetables in this City"]

[Text] Since early June, the vegetable shortage in this city has taken a turn for the better. Now, quite a few vegetables are piled up in every vegetable shop. Varieties are complete, and prices are fairly reasonable. From January through May of this year, the supply of vegetables in this city was rather short. In order to reverse this passive situation, the Municipal CCP Committee and the municipal government enhanced leadership over vegetable production and set up a municipal vegetable science and technology advisory group to give technical guidance. Simultaneously, they called upon the broad masses of cadres and vegetable farmers in vegetable-producing areas to use all manner of means to triumph over natural calamities of all kinds to win a good harvest from vegetables planted in the spring.

After the vegetables were sown this spring, a cold snap occurred, and the broad masses of cadres and vegetable farmers sought ways to increase the soil temperature. After mid-June, the air temperature suddenly shot up and precipitation was less than in former years, with the result that fruity vegetables such as tomatoes became diseased. Thanks to timely watering, application of fertilizer, use of pesticides and an intensification of field care, a fairly good crop was obtained from the spring planting of vegetables.

During June, more than 170 million jin of vegetables of various kinds were sent to markets throughout the city--an increase of 3.2 million jin over the same period a year ago. Of the total, more than 84 million jin of melons, fruits, and pulses, which the urbanites much like, were marketed for a 58.2-percent increase over the same period last year. More than 16.2 million jin of tomatoes reached the markets--an increase of 5.6 million jin over the same period last year. Eggplants sent to market

totaled 6.9 million jin, an increase of 3.9 million jin over the same period last year. Cucumbers sent to market amounted to 38 million jin, a 13-million-jin increase over the same period last year. Kidney beans marketed amounted to 15 million jin, an increase of 6.5 million jin over the same period last year. During July, the quantity of vegetables of all kinds sent to market continued to increase. During the first and second 10 days of the month alone, more than 170 million jin of various vegetables were marketed, an increase of almost 9 million jin over the same period last year. Of this amount, more than 150 million jin consisted of melons, fruits and pulses, an increase of 17.4 percent over the same period last year. Such a large quantity of melons, fruits and pulses has rarely been marketed during the past several years. Now the vegetable markets are quite well stocked and varied.

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PAY HEED TO ECONOMIC BENEFITS OF ANIMAL HUSBANDRY

Beijing BEIJING RIBAO in Chinese 22 Jul 80 p 2

[Article by Liu Fuhai [0491 4395 3189] of the Pinggong County CCP Committee Office: "Grasp Animal Husbandry but Pay Attention to Economic Results"]

> [Text] Editor's Note: The problems raised in this article are of general application. Last year, this municipality's expense-to-income ratio for agricultural production was the highest in the country. Quite a few leadership comrades on the agricultural battlefront still do not possess a high degree of concern about this problem. They say: "In small suburban areas of big cities, where the level of agriculture is high, it is practically unavoidable to have expenses that are a little high. Just as long as the city can be taken care of, that's all right." Such "taking account only of the political without taking account of the economic" has to change. We must strive to derive the greatest economic benefits possible at the least possible cost, in order to provide the capital city with agricultural sideline products to the best of our ability, and to make the collective and the commune members prosperous in the shortest possible time.

Quite recently, I made a survey and analysis of the accomplishments in animal husbandry and agriculture in Pinggu County for the 2 years 1978 and 1965. I feel there is a problem that should arouse the highest degree of attention from leadership comrades at all levels in rural villages, and this problem is that attention must be given to the economic achievements of production in agriculture and animal husbandry in the same way that attention is paid to business enterprises.

Both 1978 and 1965 were quite good years for production in agriculture and animal husbandry in Pinggu County. They were very comparable years. A comparison of 1978 with 1965 shows that total grain output increased by

76 percent and average yields per mu doubled. Cumulative raising of hogs doubled, and the number of slaughter hogs increased 1.4-fold. However, as reflected in economic achievements, there was no direct ratio. Net income for agriculture and animal husbandry increased by only 24 percent, while expenses doubled. In 1965, the cost-to-profit ratio was 1:2.25, and in 1978 it was 1:0.93. In 1965, average disbursements to commune members were 67.30 yuan. Following conversion, net profit from agriculture and animal husbandry for the entire county returned an excess of 2.04 million yuan for use in the expansion of further production. In 1978, average distributions to commune members were 114 yuan, and shared distribution amounted to 34.63 million yuan. In that year, however, net income from agriculture and animal husbandry was only 24.5 million yuan. This means that if all the net income from agriculture and animal husbandry were to be distributed, it would still not be enough, to say nothing of expansion of further production.

Was not the reason for this state of affairs the failure of leadership at all echelons to pay close attention to agriculture and animal husbandry, as well as grudging expenditure of effort and investment of capital in this direction? No, it was not. For 10 years and more, the slogan "Surpass 100 in cotton and surpass 1,000 in grain; greatly develop pigraising endeavors" was shouted loudly throughout the county. Between 1971 and 1979, investments of capital construction funds for farmlands and water conservancy throughout the county (only the state portion being counted, and not including the amounts put up by communes and brigades themselves) amounted to 19.69 million yuan. In 1977 and 1978, the state alone invested 2.1 million in the construction of mechanized and semimechanized hog farms and chicken farms. A comparison of 1978 with 1965 shows that expenditures for chemical fertilizer throughout the county rose from 6.30 yuan to 19.20 yuan per mu of collective farmland. Expenditures for hydroelectric power rose from .50 yuan to 2.82 yuan. Farm machinery expenditures rose from .31 yuan to 4.64 yuan. Expenditures for pesticides rose from .39 yuan to 1.20 yuan. This shows that every echelon of leadership gave serious attention to production in agriculture and animal husbandry, investing large amounts of capital. The problem is that many county, commune and brigade leadership comrades frequently emphasized only grain production and the number of head of cattle--i.e., the so-called "loudly shouted" individual indicators--while neglecting net income, meaning profits, which are overall indicators reflecting production achievements.

What can be done to change the current situation? I believe it is most fundamental that every echelon of leadership have a correct business sense--i.e., they have to run communes and brigades in rural villages like business enterprises. Specifically I propose the following:

1. Give strict attention to the management of labor in order to increase labor productivity. Labor management is the core of all management on people's communes. Only by taking labor management in hand and increasing

labor productivity can good economic achievements be realized and the energetic management of other quarters be possible. Because management was done well in the Yuegezhuang Brigade of Wangxinzhuang Commune, they were able to fully tap unused potential in the labor force, and last year the average aggregate production capacity for each unit of labor was 2,100 jin of grain, 6,800 jin of vegetables, 1.7 head of slaughter hogs, 45 jin of fresh eggs, 34 force-fed ducks and a net income of 436 yuan from sideline enterprises. If most of the production teams throughout the county were able to reach the levels attained by those of Yuegezhuang, imagine the economic achievements that could be made! This year, a majority of the basic accounting units throughout the county have set up systems of responsibility for production of one kind or another, and this is a fine beginning. Institution of the method of "work team responsibility for labor, for output, and for expenditures, with awards for excess production and conservation in expenditures," is more beneficial to the attainment of better economic achievements.

2. Adoption of decisive measures for a resolute reduction of expenditures. One of the major reasons for poor economic achievements is that most places pyramid the money used for grain output. In the case of farm machines and draft animals, for example, in 1978 various kinds of farm machinery totaling 190,000 horsepower were in use in rural villages throughout the county, for a 19-fold increase over 1965. Nevertheless, the number of mature draft animals was still what it had been in 1965. In 1978, expenditures throughout the county for farm machinery and draft animals totaled 4 million yuan. This was 15.2 percent of total expenditures for agriculture and animal husbandry, and 16.3 percent of net income for agriculture and animal husbandry. It amounted to a 1.02-fold increase over 1965. On the basis of the foregoing, I wonder if it might not be possible to use a system of "control, reduction and halting" to reduce expenses for farm machinery and draft animals. By control is meant a reduction in the normal use of farm machines, particularly their use for nonproductive purposes, through restrictions on the use of fuel for farm machines. By reduction is meant as much of a decrease as seems possible in the number of mature animals. By halting is meant halting the use of some excess tractors, or halting their use year round or in a particular season. Thus, if in a year like 1978, expenditures could be reduced by 10 percent, a saving of 400,000 yuan would result. During 1978, expenditures for fertilizer throughout the county were 19.2 yuan per mu, while at Yingcheng Commune they were only 16 yuan. If other communes were able to reduce expenditures to the level achieved by Yingcheng Commune, more than 1.2 million yuan could be saved throughout the county in a single year.

3. Careful attention to economic crops, and tapping of unused potential in output and profits. Net income from economic crops should be vastly greater than that from grain crops. Nevertheless, for the past several years this is not the way matters have been in Pinggu County. In 1978,

the average gross income per mu throughout the county was only 53 yuan for 87,000 mu of economic crops. This was 68.72 yuan less than the gross income per mu of grain for the same year, and 22 yuan less than the average gross income per mu of economic crops in 1965. If average gross income on economic crops were to amount to 100 yuan per mu, in terms of the 1965 ratio of expenditures, the whole county could have a net increase of 1.54 million yuan.

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BRIEFS

RURAL CONSTRUCTION--Recently, the Fujian Construction Committee and the Fujian Agricultural Office jointly held the first conference on housing construction in the countryside. Participants at the conference were urged to speed up housing construction in the countryside. The party and government organs at all levels must strengthen leadership, improve the peasants' standard of living, close the gap between the cities and countryside and consolidate the worker-peasant alliance. At present, it is necessary to pay very serious attention to implementing policy and give full play to the two activism of the commune members and the collectives. The collectives' houses can be rented or sold to the commune members. It is also necessary to pay attention to the areas given over to housing so as not to occupy farmland. [HK041216 Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 28 Aug 80]

REPORT ON SUGARCANE--At present, 650,000 mu of sugarcane in Fujian is coming along well. This year, the area sown to sugarcane throughout the province was increased by 30,000 mu. Despite drought and typhoons since the beginning of the summer, the growth of sugarcane has been encouraging. An on-the-spot meeting on sugarcane tending was recently held in Xianyou County. [Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 31 Aug 80]

CSO: 4007

BRIEFS

LESS RAIN--The distribution of percipitation in Gansu Province during August is as follows: Rainfall measuring over 20 millimeters was reported in the Hexi mountainous areas with the exception of the areas around the Qilian Mountain. Rainfall measuring about 30 millimeters was reported in Lanzhou municipality, Gaolan, Jingtai, Jingyuan, Yongjing and other counties. The amounts of rainfall in Yongdeng, Yuzhong, Jingndt Wen, Gulang, Guanghe and other counties were from 40 to 60 millimeters. The amounts of rainfall in Gannan Tibetan Autonomous Prefecture, the southern parts of Qingyang and Linxia Hui Autonomous Prefectures and most parts of Pingliang Prefecture exceeded 70 millimeters. The amounts of rainfall were less than that in the previous corresponding periods. As a result, signs of drought appeared in the counties around Lanzhou municipality and autumn crops in many parts of the province were affected in varying degrees. [Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 6 Sep 80]

CSO: 4007

COMMUNE, BRIGADE INDUSTRY BENEFITS PEASANTS, STATE

Guangzhou NANFANG RIBAO in Chinese 17 Jul 80 p 2

[Article by Tang Zhenyang [3282 2182 7403], Huang Jianchuan [7806 1696 1557], and Xing Yisen [6717 4135 2773]: "Commune and Production Brigade Business Enterprises Grow; Peasants Directly Benefit; State Tax Revenues Increase as Qiongshan County's Financial Departments Support Commune and Brigade Development of Agricultural Sideline Products Processing Industries"]

[Text] Bearing down on the central task of making the peasants prosperous with all possible speed, the Qiongshan County financial departments, in concert with other units, have taken the initiative to support commune and production brigade development of agricultural sideline industries engaged primarily in the processing of local resources, so that the farmers will directly benefit, and the state's tax revenues will constantly increase. Last year total profits from commune and production enterprises throughout the county amounted to 2.21 million yuan, an increase of 16.3 percent over the previous year. Tax revenues paid to the state amounted to more than 918,000 yuan.

In the wake of the Third Plenary Session of the 11th CCP Central Committee, the Qiongshan County financial departments diligently summarized the lessons of past experience in support to agriculture, and realized that financial support to agriculture also had to adjust methods to local situations, and adapt to the local economic structure. Thereupon, they seized upon the clever method of concentrating their major financial resources to emphasize support to commune and brigade development of processing industries for local resources as a way of promoting production and increasing wealth, helping the poor to become rich. Last year, the financial departments disbursed a total of more than 1.3 million yuan to 27 communes and 1/3 of the production brigades in the county for new construction and expansion of sideline industries engaged mainly in processing. Currently communes and brigades throughout the county are operating rubber, flower fragrance, lemon grass, black pepper, coffee, tea leaf, fruit, sweets, oils, nonstaple food, brick, lime, wooden articles, hide tanning, cane pressing, paper manufacture, and farm machinery processing industries in 415 business enterprises.

The Qiongshan County financial departments have given attention to adjusting methods to local situations and giving diversified guidance to help every local jurisdiction use its local resources and other conditions to the full, making every effort to make small investment bring quick results, and large benefits. Rubber resources are plentiful in the Sanmenpo Commune where the county financial departments in April of last year invested 32,000 yuan to help that commune build a rubber sheet processing plant. As of April this year, it had produced a total of 61 tons of rubber sheets for a profit of 80,000 yuan. The Tanwen Commune is a grain producing area with few people and lots of land. Taking advantage of the favorable situation of lots of land, the financial departments helped the commune to grow more than 1,290 mu of flowers on both wet and dry fields, and to build a flower oil refining plant. During the last half of last year, it had revenues of 300,000 yuan. The Hongqi Commune has a lot of hilly land, which it has customarily used for the growing and processing of lemon grass. The financial departments helped them expand their lemon grass processing industry, and last year total output value for citronella oil amounted to 630,000 yuan, accounting for 62 percent of total income for the entire commune's agricultural sideline products. It increased state tax revenues by 28,000 yuan. It has become the commune producing the largest amount of citronella oil on all Hainan Island.

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SCIENTIFIC OCEAN FISHING INCREASES CATCH

Guangzhou NANFANG RIBAO in Chinese 17 Jul 80 p 2

[Article by Tang Zhenyang [3782 3182 7403] and Shi Fangkao [0670 2455 5072]: "Scientific Fishing Nets High Output for Five Years in a Row; Number 5 Fishing Boat Detachment of the Nanhai Aquatic Products Company Combines a Revolutionary Spirit and a Scientific Attitude for Remarkable Accomplishments in Catching Fish; Designated Numerous Times as an Advanced Unit in the Aquatic Products System"]

[Text] The Number 5 Fishing Boat Detachment of the Nanhai Aquatic Products Company, which has persevered in scientific fishing to create high output, has for 5 years been able to fulfill fish catching plans ahead of schedule year after year despite continuous annual losses by the company. During the past 5 years it has turned over to the state profits of 1.178 million yuan and has several times been commended by the central, provincial, and prefectural aquatic products system, as well as by the company, for being an advanced unit. This year it has again overfulfilled first quarter fishing plans ahead of schedule, tendering profits of 32,000 yuan.

This detachment was organized in 1975 and now has six 150-ton, 400-horsepower trawling boats with cadres and crewmen numbering 125 persons. During recent years, as a result of reckless fishing which permitted the fish no rest or replenishment, the inshore fishing industry resources in the Nanhai were damaged. This, plus abnormal weather on the sea, caused rather great changes in the varieties of fish, and the quantity of ocean fish catches showed a marked decline. How can both growth in the ocean fishing industry be accomplished while preserving fishing industry resources at the same time? The Nanhai Aquatic Products Company's No 5 Fishing Boat Detachment probed the laws governing ocean fish, adhered to scientific fishing practices, and closely combined a revolutionary spirit with a scientific attitude to reap rather good economic benefits in the ocean fishing industry.

The No 5 Fishing Boat Detachment lay emphasis primarily on the following three links:

1. Analysis of all fishing information to increase fishing performance. For many years the No 5 Detachment persisted in analysis and study of the meteorological conditions, seasonal winds, water temperatures, ocean currents, direction of trawling, speed of trawling and kinds of catches in the fishing grounds, and adopted measures commensurate with findings to catch fish. During one trip, one of their fishing boats was not getting very high catches at first in the fishing grounds of eastern Guangdong. They subsequently carefully analyzed the catches and their trawling methods, discovering that most of the fish in their catches were dead hairtails, and that there were also quite a few hairtails that had been impaled on the outside of the nets. Using this information, They made the judgment that the death of a large number of hairtails meant that the hairtails had entered the net rather early, and the hairtails impaled on the outside of the nets meant that in the course of trawling the mouth of the nets were not sufficiently open at the bottom of the sea. Once they discovered the reasons for the catches not being high, they turned the boat around and trawled again over their original route, making appropriate increases in the buoyancy of the mouth of the nets to make them float higher. As a result, per net catches rose from 28 dan to 80 dan, and hairtail catches for a single trip amounted to 73 tons to break the record for catches from a single trip.

2. Proper selection of fishing grounds, and rotation from one to another. There are many varieties of fish in the Nanhai, but schools are not big and the areas they inhabit are more or less stable. As a result of changes in the ocean, the No 5 Detachment instituted overall planning and rotation of operations. In general, they operated during the first and fourth quarters in northern bay areas, during the second quarter to the southwest of Hainan Island, or in southeastern or southern ocean areas, and during the third quarter, they either returned to northern bay areas, to the northeast, or to the area east of Guangdong Province. They also mostly put out to the deep sea, rarely fishing in shore, and frequently they went to places where the sea bottom was complex, and to fishing grounds that fishing boats rarely visited, actively opening new fishing grounds. By so doing, when resources were exhausted in some places, they were still able to maintain high output of superior quality while at the same time allowing the fish to recuperate and multiply to a certain extent.

3. Readjustment of fishing nets to increase catches. In May of this year, the No 11 boat of the attachment happened upon a school of large eyed porgies at the 533, 510 and 509 fishing grounds. Since the mouths of their fishing nets were not at the proper height to take in the thick mass of the school, catches were not high at first. So they fitted floats to the headropes at the mouth of the fishing nets, taking account of the drag and pulling force of the nets so as to increase buoyancy at the mouth of the nets. They also frequently checked the boat's position and analyzed the movement of the school of large eyed porgies, set out fixed buoys, and continued to fish in the middle of the fishing ground.

As a result of these actions, catches rose from an initial 20 dan per net to 60 dan. In three trips, 100 tons of fish were landed, and as of 7 May, this boat had completed its production quotas for the first half of the year with profits of 50,000 yuan.

For the past several years, the No 5 Detachment has continued to go to sea, vying with the direction of the winds and riding on their tails to use every minute and second to catch more fish. According to company regulations, under normal circumstances, time in port between sailings cannot exceed 72 hours. But the No 5 Detachment worked at readying the boats for another sailing even while returning to port. As soon as the boats reached port, both cadres and crew worked together to wash the holds and replenish supplies. As a result, none of the boats remains in port longer than 36 to 48 hours before putting to sea again, and some remain in port only 12 to 24 hours. They also carry out operations in high winds, and they fish at night. According to statistics, in the course of the past 5 years, quantity of fish caught at night has amounted to 6,848 tons, or 31 percent of total catches. As a result of improved management and the practice of economy, during the past 5 years, they have saved the state a large amount of material, and costs have been reduced drastically, with average costs per ton of fish being 258.77 yuan, 46.4 percent lower than for the company as a whole.

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XINGNING COUNTY POND FISH OUTPUT INCREASED

Guangzhou NANFANG RIBAO in Chinese 17 Jul 80 p 3

[Article by Liao Qixin [1675 0796 2450]: "Pond Fish Output Potential Great; Dongyi Production Team of Xingning County Institutes Scientific Raising of Fish With Per Mu Yields of Pond Fish Exceeding 2,000 Jin"]

[Text] Editor's Note: The sudden increase in per mu yields of pond fish from 800 to 2,050 jin at the Dongyi Production Team in Xingning County has demonstrated that a great potential exists for the development of pond fish output.

There are more than 1 million mu of fish ponds in Guangdong Province, and more than 3 million mu of mountain pools, but pond fish output is currently not high. If we could do as the Dongyi Production Team has done in setting up a system of responsibility welcomed by the masses, use policy to arouse the enthusiasm of those in charge of the ponds, and widely promote scientific techniques for raising fish, a large-scale increase in pond fish output in Guangdong Province would be entirely achievable.

The Dongyi Production Team of the Wenyi Production Brigade of the Ningtang Commune in Xingning County has obtained high outputs through scientific fish raising. Last year, on an area of 1.2 mu of fish ponds, total output of fresh fish was more than 2,400 jin, or an average output of 2,050 jin per mu, the best in the entire county.

The Dongyi Production Team's fish ponds used to produce annual yields of no more than 800 jin per mu because they were badly managed. But ever since 1969 when this team designated a commune member specially responsible for management of each fish pond, and implemented a system of responsibility using "grading of production with awards for excess production," the enthusiasm of the management personnel has grown to new heights; the level of scientific fish raising has steadily increased; and efforts have

been bent to achieve: 1) Reasonable mixing together of different varieties of fish in close proximity. Benefiting from the fondness of grass carp for green feeds, the fondness of variegated carp for floating animal life, the fondness of silver carp for floating plant life, dace's choice of bits and pieces of organic matter and floating plants as its food, the liking of black carp and common carp for snails and the bivalves, Corbicula leana, the team comingled different numbers of grass carp, variegated carp, silver carp, dace, black carp, and common carp, putting them together closely in the same ponds, making sure that each variety of fish was able to get the kind of food it needed so that each variety put on weight equally. 2) Putting fish into the ponds at different times and catching them at the proper time. Various kinds of fish fry were put into the ponds according to the season, usually three times annually, namely in February, March and September when individual varieties were released just once in any given month. During the first two times, mostly grass carp, variegated carp, and silver carp were released with an appropriate comingling of some black carp and common carp. At a later time, more grass carp, variegated carp, and silver carp were released, plus a certain number of dace. After the fish had reached a definite weight, fishing began. Large ones were taken and small ones left. As fishing progressed, so did release of more fry into the pond so that large, medium, and small fish of three generations occupied the pond at the same time. The fish also lived together in the top, middle, and lower levels of the pond. All year round as fish became available for catching, the density of the number of breeding fish increased, and conditions were thus created for a high output of fish. 3) Scientific feeding and institution of the "four fixed's." In order to insure that the fish got enough to eat, ate well, and put on weight rapidly, they provided feed of the kind each variety of fish liked at fixed times, in fixed amounts, of fixed quality, and at fixed places while taking account of the season of the year, the climate, the water temperature, and the quality of the water. During spring and summer, for example, they cut green grass and fish-dredging madder [laoyuqian 2318 7625 5409] for feeding. During the fall and winter season, when green feed was rather scarce, they used young sweet potato plants, cassava leaves, yam bean leaves, and ox and pig dung to take its place to make sure that sufficient feed was available in every season of the year and that the fish had balanced growth. 4) Reasonable amount of draining and replacement of the pond water to prevent disease and escape of the fish. Depending on the different seasons and different climate, reasonable draining and refilling of the pond water was done, usually bringing fresh water into the ponds to assure that the water was clear, fresh, and contained sufficient oxygen to make sure that the fish lived normal lives. Every time it rained, ditches all around the fish ponds were cleared to prevent turbid, muddy water from flowing into the fish ponds, and bamboo blinds were stuck into the water ditches to let excess water drain away and prevent the pond water from overflowing the rim of the pond so that the fish could escape. During seasons when the fish were susceptible to diseases, they added natively produced farm chemicals to the water. In order to prevent outbreaks of

fish diseases, they drained the ponds periodically, and cleaned out the sludge. They also built an enclosure around the fish ponds to block off snake and rat burrows and to keep snakes and rats from harming the fish fry so that the survival rate of the fish was remarkably high. Because of the adoption of these effective measures, pond fish output increased year after year.

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UTILIZATION OF MOUNTAIN AREAS FOR LIVESTOCK DISCUSSED

Guangzhou NANFANG RIBAO in Chinese 17 Jul 80 p 3

[Article by Liu Junyue [0491 0971 6460]: "Utilization of Grassy Mountains and Grassy Slopes To Develop the Livestock Industry"]

[Text] Grasslands are a major feed source for the development of the livestock industry. In view of current world trends in the development of livestock industries, development of grass-fed livestock is arousing more and more serious attention.

Guangdong Province, which is located in the tropics and semitropics where it is under the influence of the southeast monsoon winds all year long, and where rainfall is copious, is a good place for the growth of all kinds of plants. In Guangdong, per mu yields of fresh hay from fine quality grazing grasses that have been planted can amount to as much as 20,000 jin. High yields can amount to 35,000 jin of fresh hay per mu. According to imcomplete statistics for agricultural programs, in addition to the more than 50 million mu of cultivated land throughout Guangdong Province, there are also 46.72 million mu of mountain wasteland, 10.7 million mu of undeveloped land and more than 1.87 million mu of sea beaches. A large area of mixed forest and pasture land has not been included. The 3 categories of uncultivated land total more than 59.29 million mu. For a long period of time it has not been possible to develop and use these barren and undeveloped lands, which amount to more than the area of cultivated land. If all of the more than 59.29 million mu of undeveloped and barren land were to be improved and put to use step by step, the entire province would have a total capacity for cattle of from 6.76 million to 12.89 million head.

In the past we lacked the research necessary for the development of grassy mountains and grassy slopes, so it was very difficult to put forward complete and specific ideas. In order to meet the urgent needs for production, merely a few problems are raised below for consideration:

(1) The problem of livestock capacity. Safeguarding grassy mountains is the best way of using grassy mountains. Unless the livestock capacity is

reasonable, overgrazing will result, and the grasslands will be destroyed. A pertinent report from Australia says that once the grasslands have been seriously damaged, from 2 to 3 years are required to restore normal production. Therefore, proper control over the livestock capacity is the key to insuring that grassland production remains normal. Grassy mountains and grassy slopes everywhere in Guangdong Province vary greatly in their output of grass as a result of the effects of various natural factors. Therefore, determining the livestock capacity is not something that can be done in a single stroke. The actual situation has to be taken into account and sensible use made of the land. The number of livestock and the distrubution of types has to be decided after investigation and study on the basis of the amount of grass that can be produced. On the basis of the results of a study done by the Hainan Livestock Institute, a single ox requires 16,500 kilograms of grass annually. Figuring a 60 percent feeding ratio from green grass, for grassland producing 5,000 kilograms of fresh grass per mu per year, 5.5 mu of grass would be needed to raise a single ox. The passive situation of reliance on the heavens in raising livestock can be effectively overcome only by figuring the number of livestock on the basis of available grass.

(2) The problem of balanced grazing grass production and balanced nutrition. Looked at in terms of present reliance on natural grasslands to raise cattle, a universal situation of "full in summer, fat in fall, and skinny in winter" exists for livestock, which is far from an ideal way of putting weight on animals. This, plus the period when the grass withers in natural grasslands, and the single kinds of grass available is closely related to poor quality. The withered grass season results principally from the dry winter weather and the lack of wintering grasses. Consideration of the problem in overall terms requires additional sowing of suitable wintering grasses, such as Anshi No 1, in the grasslands. In prefectures south of Guangzhou, Zhuhua [2691 5363] grass [Brazilian alfalfa), which grows all year round, may be planted. Additionally, preparations should be made to store, on the basis of needs, the grass from the summer and autumn seasons of abundance. Only through a combination of the two can the problem be fully solved. In order that livestock will derive full nutrition from grazing grasses, it is necessary to give careful attention to the planting of legumes.

(3) The problem of management of natural grasslands. The main tasks in the management of grasslands are to prevent their deterioration, to maintain the vitality of the grazing grasses, and to steadily increase the productivity of the grasslands. In countries and regions with advanced livestock industries, rotation of grazing from one place to another is paramount. It is acknowledged that rotation of pasturage can increase output of the grasslands by 100 to 200 percent. In places where conditions are favorable, methods may also be adapted to situations, and locally available materials used for the planned fencing of areas to confine the livestock to designated areas for feeding. According to reports from abroad, a single enclosure can increase productivity 25 percent. After grazing lands have been divided, pasturing may be rotated according to a fixed schedule in one cycle after another. This method has numerous advantages both for increasing productivity of the grasslands and for management.

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PROTECTION OF ABALONE RESOURCES—Comrade Editor: The great decline during the past several years in abalone output on Naozhou Island in Zhanjiang Municipality merits serious attention. In the ocean waters to the northeast of Naozhou Island in Zhanjiang Municipality, and in the nearby numerous reefs, stormy waves are large, ocean plants abound, and the water is perfectly clear. It is a famous natural abalone ground. According to statistics from the local aquatic products authorities, average annual output here during the 1950's was more than 40,000 jin, which by last year had declined to less than 4,000 jin. The main reason for the decline in abalone output has been the reckless and unbridled harvesting of it without serious regard for preservation of resources. For example, the fresh abalone requisition-purchased last year by the Naozhou Aquatic Products Station were very small. Following the sun drying, the number weighing only 1 jin numbered more than 1,164. Abalone is delicious and is full of protein. It has been termed the "king of seafood." Abalone shells are also a fine medicine used in Chinese medicine for the treatment of eye diseases. It has been popularly termed "a stone with power over sight." Consequently, we should do well to propagate and protect this precious aquatic resource. This year as the abalone season approaches, I hope that the authorities concerned will strengthen leadership and pervasively propagandize on a grand scale the "Aquatic Products Propagation and Protection Regulations" promulgated by the State Council, and that they will also adopt some commensurate management measures so that harvesting of abalone at Naozhou will be done rationally. [Signed] Zhang Chaoqun [1728 2600 5028], Propaganda Department, Zhanjiang Suburban CCP Committee. [Text] [Guangzhou NANFANG RIBAO in Chinese 17 Jul 80 p 2] 9432

CROP REPORT--This year, the total output of early rice in Huiyang County increased by 150,200 dan over the corresponding period of last year. This was an increase of 12 percent. The average increase per mu was 40.5 jin. The total output of spring peanuts increased by 24,000 dan over 1969, which previously was the highest level, while the output of soybeans reached 27,000 dan. This was an increase of 8,000 dan over the corresponding period of last year. There are 8,000 production teams in this county. Tending of these crops this year was better than last year. [Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 18 Aug 80]

EARLY RICE--This year, the average per mu yield of early rice in Chaoyang County reached 810 jin. There were 430,000 mu of early rice in this county. The average per mu yield from 330,000 mu of Gui Chao was 837 jin. This was an increase of 110 jin per mu over other varieties. [HK0412247 Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 17 Aug 80]

NEW HYBRID LATE RICE--The new variety hybrid rice bred by the Xingning County Agricultural Institute, Shanyouke 30, is characterized by large panicles, numerous grains, and heavy grains. It has an 87.3 percent grain setting rate, and the per 1,000 grain weight is 27.4 grams. Assessment by the Provincial Agricultural Institute authorities acknowledged it to have strong photosensitivity and weak temperature sensitivity, to be early ripening, high yielding, suitable for planting as a late crop, and desirable for extended cultivation. The illustration shows technicians from the institute in the seed field analyzing the grain setting for the new variety. [Text] [Guangzhou NANFANG RIBAO in Chinese 16 Jul 80 p 1] 9432

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EARLY RICE HARVEST--Guangxi Regional reaped a bumper harvest of early rice this year. The total production amounted to 11.73 billion jin, showing an increase of 2 percent compared with the same time last year. The region was able to reap a bumper harvest because all areas had done well in giving play to their strong points and avoiding shortcomings, and in raising the standard of scientific cultivation. There were droughts in some areas of Guangxi between last winter and spring this year. For instance, in the southern part of Guangxi, rainfall in May decreased by 20 to 40 percent compared with the previous years and rainfall in the period from January to March decreased by over 50 percent. Despite the difficulties brought about by natural disasters, everyone in Guangxi worked hard to fight drought and implement the relevant policies on agriculture, and reaped a bumper harvest of early rice. [Nanning Guangxi Regional Service in Mandarin 1130 GMT 23 Aug 80]

EARLY RICE OUTPUT--After achieving a record output in total and per-mu yield last year, Guangxi Zhuang Autonomous Region reaped another "bumper harvest" from its early rice this year. This year's total output exceeded that of last year by two percent. Transplanting of late rice is virtually completed and the seedlings are growing well in general. [Text] [Beijing RENMIN RIBAO in Chinese 22 Aug 80 p 1]

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BRIEFS

AFFORESTATION REPORT--Heilongjiang Province has assigned some 6.4 million mu of state-owned forest land for communes and brigades to plant trees. More than 2,172 commune and brigade-run forest farms have been established in the province, and each farm has its own nursery plots. About 3.1 million mu of barren hills and wastelands in Heilongjiang Province need afforestation. In view of this, the Heilongjiang Provincial People's Government has readjusted the present forestry policy and decided that, on the principle of not disrupting rational management of state-owned forestry farms, communes and brigades may plant trees on barren hills, wastelands and small, scattered forest lands surrounding their households. Brigades are generally permitted to plant trees on 1,000 mu of land and communes on 10,000 mu of land. It is expected that all wastelands and barren hills in Heilongjiang Province will be afforested in 5 years. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 4 Sep 80]

FARM MECHANIZATION--With the approval of the Heilongjiang Provincial People's Government, the Hejiang, Nenjiang, Mudanjiang, Songhuajiang and Suihua Prefectural Institutes of Farm Mechanization were recently changed into five specialized institutes: Institute of Mechanized Processing of Farm and Sideline Products, Institute of Animal Husbandry Mechanization, Institute of Paddy Field Mechanization, Institute of Cash Crop Mechanization and Institute of Farm Machinery Utilization. They are now under the direct control of the Provincial Institute of Farm Mechanization. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 8 Sep 80]

FORESTRY MEASURE--In order to ease energy and firewood shortages, the Heilongjiang Provincial People's Government has decided to allot, beginning this autumn, 3 mu of land for every rural household to build firewood and charcoal forests. Thus, there should be 10 million mu of firewood and charcoal forests in rural areas within 3 or 5 years. At an 8 September telephone conference, the Provincial Forest Administrative Bureau implemented specific plans for forest departments at the prefectural, municipal and county levels. [SK110942 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 9 Sep 80]

WHEAT PROCUREMENT--As of 11 September the Heilongjiang Provincial State Farm Administrative Bureau had overfulfilled the annual wheat procurement plan by 290,000 jin. This accounts for 80 percent of the total amount of wheat procured by the province, setting a new state-farm record in handing wheat over to the state. Top-quality wheat accounts for 90 percent. More than 100 state farms subordinate to the Provincial State Farm Administrative Bureau reaped a bumper harvest of spring wheat on 14.8 million mu of wheat-fields. It is expected that this year's gross wheat output will increase 20 percent over that of 1979. [SK120729 Heilongjiang Provincial Service in Mandarin 1100 GMT 11 Sep 80]

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BRIEFS

RICE PLANT INSECTS--A short commentary on Hubei Radio revealed that the people in Hubei have experienced rain over a long period since the beginning of August accompanied by high temperature and humidity. Such a climate is very suitable for the propagation of rice leafhoppers and leaf rollers that feed on rice. In many areas, this threat is very serious. At present, annihilation of the fourth generation of brown leafhoppers is the key to reaping bumper harvests of midseason and late single crop rice. If this is not grasped well, it will affect the production of the late double-cropped rice. Therefore, from now until early September, all areas must adopt shock prevention for midseason and late single crop rice. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 29 Aug 80]

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BRIEFS

TRAINING OF CADRES--In the past two years, many farm technicians and cadres specializing in agriculture, forestry, irrigation, farm machines and/or meteorology went through training in Hunan. The total number attending exceeded 528,000, including 189 cadres at above-county levels. [Beijing GUANGMING RIBAO in Chinese 12 Aug 80 p 2]

PREFECTURE FLOODS--In early and mid-August, the people in Yiyang Prefecture experienced rainstorms on many occasions. Some 990,000 mu of farmland including 820,000 mu of late rice was flooded throughout the prefecture. Some reservoirs, dams, ponds, small hydroelectric power stations, bridges and houses were also damaged. Recently, the Prefectural CCP Committee has transferred personnel from the military subdistrict, the civil administrative bureau and public health units and organized them into three comfort groups to go to Taojiang, Nan and Yiyang counties, where the situation was most serious. The government has allocated 185,000 yuan of relief funds, 200 cubic meters of timber and bamboo and other materials to help the afflicted people to rebuild their homes. In Taojiang County, 210,000 mu was affected including 140,000 mu of late rice. [Changsha Hunan Provincial Service in Mandarin 1100 GMT 21 Aug 80]

PREFECTURE CATTLE--There are now 98,000 cows in Xiangxi Autonomous Prefecture. This is an increase of 15,100 head over 1978. The prefecture strictly forbids the slaughtering of cows that are suitable for breeding and encourages the raising of cows by private individuals while developing the number of collectively raised cows. At present, there are 1,400 cows raised by private individuals throughout the prefecture. [Changsha Hunan Provincial Service in Mandarin 1100 GMT 26 Aug 80]

PRODUCTION RESPONSIBILITY SYSTEMS--The Hunan Provincial CCP Committee and Provincial People's Government recently decided to stabilize all forms of production responsibility systems during this year's summer harvest preliminary distribution. In their circular, they said that after discussion and agreement by the masses, some production teams whose production dropped due to natural disasters can properly adjust the systems and must resolutely implement them after adjustment. Where farm output quotas are fixed for each group, household and person, rewards should be given to those who strive to exceed their quotas, particularly those who greatly exceed them after working hard. At present, while carrying out summer harvest preliminary distribution, many places have organized cadres experienced in rural work into administrative teams, which will go to the countryside to help the masses stabilize and put on a sound basis all kinds of production responsibility systems. [Changsha Hunan Provincial Service in Mandarin 2315 GMT 1 Sep 80]

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COST REDUCTION IN FARMING REPORTED

Nanjing XINHUA RIBAO in Chinese 19 Jul 80 p 1

[Article by Zhang Songmou [1728 2646 5399], Xu Zhigang [1776 1807 0474], Qin Jingwu [4440 0079 0582], and Chen Renbo [7115 0088 3134]: "Wu County Gives General Implementation to System of Responsibility for Lowering Agricultural Costs. Gives Emphasis to Reduction of Costs as a Major Measure for Realizing Increased Income"]

[Excerpts] Initial results have been obtained from the first half year's general implementation of a system of responsibility for lowering agricultural costs in each of the communes and production brigades in Wu County. Between January and May, a decline of 1 percent over the same period last year occurred in agricultural expenditures. Apart from commodity fertilizer, family accumulated fertilizer, and seed, for all of which expenditures showed an increase, a marked reduction in expenditures took place for farm machine maintenance and repair, plastic sheeting, farm pesticides, and hydroelectric power. According to statistics from 10 production teams where cost accounting is being tested, during the first half year, agricultural expenses per mu of land declined an average 1.1 yuan. Lately an integration of anticipated distributions for the summer season has been underway throughout the county to arouse every commune and production brigade to undertake a complete examination of its system of responsibility for the reduction of costs, to summarize the lessons of experience, to further revise measures for increased output at reduced costs, and to promote fulfillment of the "three increases and one reduction" plan for the entire year.

With the Institution of Economic Analysis, Increased Production Can Reduce Costs

Mu County is a large grain producing county where the double and triple cropping area is large. Last year, total grain output broke 1.5 billion jin, and the amount of commodity grain it provided to the state exceeded 500 million jin. Along with the great increase in grain came a great rise in farm costs. Last year, per mu yields of grain were 116 jin greater than for the previous year, and per mu costs also increased by 10.7

yuan. Eighty-four percent of the earnings from increased production were consumed by costs. Some brigades even had decreased earnings on increased production. Therefore, the County CCP Committee instructed the broad masses of cadres and commune members, telling them a potential existed for increased grain output and that the potential for reduced costs was even greater. It also used the classical example of a comparison of accountings to find disparities and lay out the potential so that everyone could see that there really is a job to be done in the lowering of farming costs. They also pointed out that if communes where farming costs tended to be high were able to bring costs down to the average level of costs throughout the county, an expenditure of 5.68 million yuan in agriculture could be made with a reduction of 4.97 yuan per mu. Last year, Chefang Commune increased grain output by more than 11 million jin, and because of good management, the cost rate declined by 0.8 percent, with per mu costs being lower than the 10.4 yuan average for the entire county. Average disbursements to commune members increased by 36.29 yuan over the previous year. Last winter and this spring, the County CCP Committee used about 2 months time for the incremental training of more than 800 production brigade accountants and more than 8000 production team accountants in order to effectively solve ideological problems and concrete policy problems in the implementation of the system of responsibility for lowering costs. Throughout the county, 7,238 production teams, or 91.8 percent of the total number, set up and perfected a system of responsibility to reduce costs. The system of responsibility for cost reduction includes both provisions for awards and losses, with monetary awards for reduction of costs coming from the profits of commune and brigade business enterprises. Award money for cost reduction received by production teams is awarded to individual commune members on the basis of their work points. In order to intensify cadre responsibility, cadre work point supplements are closely linked to reduction of costs in a system of percentages based on "five increases and one reduction" whereby the amount of awarded work points is set for every individual. The greater the increased production and reduction in costs, the greater the supplements to arouse the cadres' enthusiasm for coming to grips with cost reduction.

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DRIVE TO INCREASE AUTUMN HARVEST--A drive has been launched in Xuzhou Prefecture of Jiangsu to overfulfill the prefecture's production plan for the autumn-ripening crops. This year, 4.02 million mu of rice has been planted, an increase of 1 million mu over last year's. This is a major crop upon which the success of the current drive hinges. [Nanjing XINHUA RIBAO in Chinese 6 Aug 80 p 1]

CROP CONDITIONS, OUTPUT--Recent torrential rain, tornadoes, hail, cloudy and rainy weather, and low temperatures have adversely affected agricultural production in Jiangsu. First of all, the summer grain crops have suffered losses. Due to spoilage of harvested wheat, many communes and production brigades have failed to reap a bumper harvest although their crop yield was good. Consequently the fulfillment of their annual production plans now depends on the outcome of their autumn harvests. Secondly, the extended period of natural calamities also has brought about many difficulties in the struggle for a bumper harvest of the autumn-ripening grain, cotton and oilseed crops. However, despite the losses, the summer grain harvest was still a good harvest, second only to last year's "bumper harvest." Due to the timely measures taken by various areas to counter the effect of water-logging, the conditions of various crops now in the fields have improved, with some approaching or catching up with those of the comparable period for last year. Moreover, the harvest of early rice crop was also better than originally expected, with an increase in thousand-grain weight and a decrease in empty grains; increased output has been reported by many counties. [Nanjing XINHUA RIBAO in Chinese 11 Aug 80 p 1]

LATE RICE CULTIVATION--According to statistics issued by the provincial Agriculture and Forestry Department, Jiangsu had 9.15 million mu of late rice under cultivation, thus fulfilling 95 percent of its plan for a total of 9.6 million mu. Transplanting of late rice has been completed in most counties in the province. [Nanjing XINHUA RIBAO in Chinese 16 Aug 80 p 1]

AGRICULTURAL ZONING--After four months of work by scientific and research units concerned, Jiangsu has completed its first draft of a comprehensive report on agricultural zoning to provide scientific data for long-term planning and current agricultural production. This report has four parts:

general discussion; rational use of agricultural natural resources and improvement of production conditions; rational adjustment of farm production plans and ways to speed up production; and discussions on agricultural zoning, totaling 300,000 words. [Nanjing XINHUA RIBAO in Chinese 16 Aug 80 p 1]

SILKWORM COCOON HARVEST--As of August 12, Jiangsu harvested 85,895 dan of summer silkworm cocoons, a 9.4 percent increase over last year's 78,506 dan. Earlier this year, Jiangsu also achieved a bumper harvest of spring cocoons. [Nanjing XINHUA RIBAO in Chinese 20 Aug 80 p 1]

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BRIEFS

SIDELINE OCCUPATION LOANS--Rural credit cooperatives in Jilin Province had granted 15.47 million yuan to commune members as sideline occupation loans during the January-July period. The money was mainly used by commune members to raise cattle, sheep, hogs and bees. By the end of July, savings deposits in rural areas had reached 237.64 million yuan, a 20.7 percent increase over that at the beginning of this year. [SK070246 Changchun Jilin Provincial Service in Mandarin 1100 GMT 5 Sep 80]

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BRIEFS

MARKETABLE GRAIN BASES--The Liaoning Provincial Agro-Technique Inspection team composed of agricultural experts and professors inspected the province's marketable grain bases in the central areas from 11 to 12 August. After inspection they held a forum and made the following suggestions: 1) Emphasize grain and ensure the all-round development of agriculture, forestry, animal husbandry, sideline production and fisheries according to local conditions when building marketable grain bases, developing commune- and brigade-run enterprises and combining grain production with diversified economy; 2) expand sorghum and soybean fields and reduce corn fields without reducing the total output; 3) plant medium-ripening variety with early-ripening and late-ripening variety as supplement to counter low temperatures which caused crop losses in the past few years and strengthen seed-breeding bases; 4) change small ridge into large ridge, ridge seeding into flat seeding, row application of fertilizer into the spreading method and change interplanting of one crop with another when the latter is nearly matured into interplanting of crops simultaneously. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 7 Sep 80]

AGRICULTURAL MACHINERY MEETING--The Ministry of Agricultural Machinery held a meeting on 8 September in Gai County, Liaoning Province, to exchange experiences on reducing fuel consumption of farm machinery. The meeting was attended by representatives of 15 provinces, municipalities and autonomous regions in North China. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 8 Sep 80]

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BRIEFS

CIRCULAR ISSUED--The Nei Monggol Regional CCP Committee and the People's Government issued a circular on 4 September calling for a meeting on production and disaster relief in late September or early October. The meeting urged all localities and departments concerned in the region to grasp the following work well: A) Strengthen people's education on the current regional situation to enable them to correctly deal with losses caused by disasters. B) Grasp autumn plowing, planting and harvest well and do a good job in storing fodder grass. C) Do a good job in solving difficulties by promoting production, encourage disaster-stricken areas to engage in industry and sideline occupations, organize commune members to collect wild vegetables and plants and do a good job in the minor autumn harvest to increase people's income. D) Protect livestock and help them survive the winter and organize collectives and individuals to mow grass. E) Strengthen the party's leadership over disaster relief work. [SK072132 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 5 Sep 80]

CSO: 4007

AGRONOMISTS CONDUCT SURVEY IN YANCHI, NINGXIA

Beijing RENMIN RIBAO in Chinese 2 Aug 80 p 1

[Article: "Cattle Raising Industry Bases Set Up Primarily for Tan [3492] Sheep Following on-Site Survey by Agronomists in Yanchi County Where They Proposed a Program for Best Economic Benefits"]

[Text] Not long ago, more than 200 agronomists and pertinent leadership cadres concerned, who were organized by the State Agricultural Commission and the Chinese Academy of Sciences, conducted a survey of the farm economy at Yanchi County in the Ningxia-Hui Autonomous Region, proposing a program for deriving best economic benefits through the fullest use of this county's advantages in natural resources and through further development of the agricultural economy.

Yanchi County is the foremost base county in the nation in the modernization of its agriculture. Located at the dividing line between the arid prairie and the desert prairie, the topography, landforms, plant cover, and climate are all markedly transitional in nature. Likewise, the economy is a transitional one between agricultural areas and grazing areas. This survey of the farming economy was done principally through an analysis of the history and the present situation of the farm economy in Yanchi County in which the lessons of experience of the past 30 years in the output of agriculture, forestry, and cattle raising were summarized, and from which recommendations were made on the basis of a readjustment of the composition of the economy, reforms to the system of management, a liberalization of economic policies, and the establishment of an economically valuable ecological balance.

Establishment of modern cattle raising industry bases primarily for tan sheep is a central task for the development of the economy of Wu County. This county is rather well developed for a prairie cattle raising industry based on the tan sheep. Output value of the cattle raising industry amounts to 45 percent of the annual output value of agriculture, and it was 87 percent in the highest year. This county has a broad natural prairie where costs of operating the cattle industry are low, income large, and the commodity rate fairly high. Tan sheep are a variety of sheep with fine

pelts that are peculiar to China. Economic value from these short-haired pelts and from wool is high. With the development of a cattle raising industry, the economy of the cities and commune and brigade business enterprises will also develop primarily through the processing of cattle products. Given the existing production conditions, plus some increase in investment, within 5 years the output value of cattle products will increase many times over.

Effective solution to the problem of food grain for farmers and herdsmen and insuring implementation of the program of "cattle first." Yanchi County has the conditions for dryland agriculture, and in both historical and current terms, it is capable of achieving self sufficiency in grain. But because of the rapid increase in population, the level of grain production is both low and inconsistent, so it is not appropriate to emphasize self sufficiency in grain output.

Establishment of combined cattle raising, industrial, and commercial business enterprises, institution of production according to zones, specialities, and commodities, and construction of modern cattle raising industry bases. To do these things, the current economic situation of self sufficiency and semi-self sufficiency in Yanchi County will have to be changed, and vigorous efforts made to develop a commodity economy with the gradual building of joint cattle, industrial, and commercial business enterprises in which pelts, wool, licorice root and such animal and soil products are paramount.

Stress must be given to the training of scientific and technical personnel for the building of the bases to fill out the scientific and technical ranks quickly, to build a system for scientific research and the promotion of techniques. All sorts of scientific and technical training classes have to be operated and regional academic discussions launched so as to combine, in fact, advanced scientific techniques with the advantages of local resources and local economic advantages.

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PRIVATE LIVESTOCK--Huangyuan County in Qinghai Province scored great achievements in developing animal husbandry. By the end of June the number of various livestocks across the county reached more than 144,000 head, an increase of more than 13,000 head over 1979. The number of individually owned cattle and sheep throughout the county stood at more than 46,000 head, surpassing that of the corresponding period in 1979 by some 20,000 head. [SK100036 Xining Qinghai Provincial Service in Mandarin 1100 GMT 8 Sep 80]

CEREAL, LEGUME HARVEST--According to statistics compiled by the Qinghai Provincial Agriculture and Forestry Department, more than 2.2 million mu of cereal and legume crops have been harvested throughout the province. [SK120731 Xining Qinghai Provincial Service in Mandarin 2330 GMT 10 Sep 80]

BEEF CATTLE BASES--Twenty-one bases for raising beef cattle for export purpose are now under construction in 13 counties and 3 state farms in Qinghai. Steps have been taken to produce sufficient fodder and feed at these bases so that fattened cattle will be available for export throughout the year. [Beijing RENMIN RIBAO in Chinese 26 Aug 80 p 1]

CSO: 4007

WAYS TO SAVE HAILSTORM-DAMAGED COTTON PLANTS DISCUSSED

Jinan DAZHONG RIBAO in Chinese 13 Jul 80 p 1

[Article by the Shandong Provincial Cotton Office: "How Can Hailstorm-Damaged Cotton Be Saved?"]

[Text] Both experience gained in production and scientific experimentation attest to the fairly strong capacity of cotton to resist hailstones. Before blossoming, even if the cotton plant is knocked bare, so long as the conductive tissue has not suffered fatal damage and the remaining stalk has leaf nodes, usually new branches will appear, growth will revive, and output will be unimpaired or may even be bumper. Therefore once there has been a hailstorm, attention must be given to the damage done and action taken to save the plants. They cannot be lightly turned under. The following rescue measures may be taken.

1. Prompt cultivation to loosen the soil so that the soil will be ventilated and its temperature increased. This helps the normal growth of the root system.

2. A dressing of quick acting fertilizer to improve the nutritional conditions for the cotton plants so that the damaged plants will revive growth as quickly as possible.

3. Prevention of damage from cotton aphids and cotton boll insects, making sure that each leaf is protected and each cotton square is treated.

4. Scientific treatment of branches. Once the damaged cotton plants resume growth, there are often numerous heads, thick growth, and numerous branches which are not good for normal squaring and blooming. Scientific treatment must be given the branches. When the center of the plant has not been damaged but only the leaves have been shredded or the boll-bearing branches broken, there is a rapid wild forking and formation of ears, and normal growth of the main stem must be assured. When the center of the plant has been broken, but broken leaves or a small number of

boll-bearing branches remain, once new buds have appeared on the top of the main stem, one or two large buds should be selected as replacements for the center growth. When the head is broken off and the plant is bare, as during the initial squaring period, for example, one or two healthy new buds growing out of the top of the main stalk may be selected for retention. No more than three should be selected for retention. If damage occurs during the early blossoming period when squaring is complete, in order to keep apace of the growing season, one cannot mechanically decide to keep a certain quantity of buds, but once most of the new buds have begun to square, one has to work over the branches getting rid of small buds that have no squares, keeping big buds with squares. At a suitably early time, the center of the plant has to be removed so that more effective bolls will form.

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ROLE OF INVESTIGATION, ZONING ON AGRICULTURE STRESSED

Jinan DAZHONG RIBAO in Chinese 15 Jul 80 p 3

[Article by Zeng Heguang [2582 0735 0342]: "A Look at the Role of Investigation and Zoning on Natural Resources for Agriculture on the Basis of Experience at Ye County and Dezhou City Test Sites"]

[Text] The investigation and agricultural zoning of natural agricultural resources is a fundamental task in the implementation of agricultural modernization. On the basis of experience at the test sites of Ye County and Dezhou City in Shandong Province, it has the following four functions.

1. It can clarify resources, allowing the leaders of agricultural production to know what is what. In the case of soil resources, for instance, many people know that the actual cultivated area will be greater than the reported statistics, but there is no precise conception as to just how much greater. As the result of a general soil survey, it is now clear that the actual cultivated area in Ye County is 12 percent more than the amount reported in 1978. In Dezhou City it is 29 percent more. In the 14 counties throughout the province where soil surveys have been done, the average is 20 percent more. Forestry resources are another example. Dezhou City originally reported 14 million trees throughout the city, but actual check showed only 4.16 million or 70 percent fewer. Four sides [house side, village side, roadside, and waterside] tree plantings in Ye County were originally reported as averaging 22 trees per person, but actual checking showed only 11. The aforestated situations demonstrated that a general check of natural agricultural resources can put an end to or reduce unsubstantiated exaggerations and can permit leaders concerned to base their work on a fairly solid and reliable foundation, thereby preserving and using natural resources in a rational way, and to make the most of advantages and eschew disadvantages and organize production scientifically.

2. It permits discovery of the major factors impeding the growth of agricultural production, the taking hold of key elements, and the adoption of effective measures. In Ye County, for example, after per mu grain yields reached 915 jin in 1975, they have since fluctuated for

4 years, making no forward progress. It was discovered as a result of this investigation that the principal reason is lack of water resources and insufficient fertility. On the basis of the pertinent investigative materials, the county CCP committee decided that in solving the shortage of water resources, they would continue to work at pertinent water conservancy projects and also act vigorously to conserve water and to use water scientifically. They would do things such as sinking blind shafts so that the aquifers would be replenished during times when water was abundant; readjust the pattern of mechanized well distribution; and vigorously develop spray irrigation. In order to increase fertility, they would actively launch mass raising of hogs and collection of fertilizer, make methane gas, intercrop with green manure, set up soil nutrient files on the fields, and gradually get around to the scientific application of fertilizer according to the soil and the crops being grown.

3. Hasten agricultural development and provide scientific data in order to adapt methods to local circumstances. To use Dezhou City as an example, farming used to be paramount in the agriculture there. They had all kinds of grain, cotton, peanuts, melons, vegetables and fruits, so as to just what they should emphasize for development was not at all clear. Following resources investigation and agricultural zoning, every echelon of leadership and the authorities concerned unanimously agreed that since the population of Dezhou City was greater than that of the rural villages, and since total industrial output value amounted to 15 times total agricultural output value, since agricultural sideline products directly accounted for half of total agricultural output value, and since railroad and highway communications were quite well developed, it was decided that the main emphasis of agricultural production should be on construction of a suburban nonstaple foodstuffs base, and while stabilizing the production of grain they should hasten the production of nonstaple foods such as meat, eggs, milk, melons, fruit, and vegetables, take the road of combined development of agriculture, industry, and commerce, and make a fairly specific delineation of areas for the formulation of individual measures to be taken in them.

4. It can spread scientific knowledge and increase the level of scientific farming. The process of investigation and zoning of natural agricultural resources is also a process for broadening the spread of scientific knowledge among cadres and the masses, and in increasing their knowledge about scientific farming. In Dezhou City, the Nizhuang Production Brigade of the Huangheya Commune had 50 mu of land, which after being deeply plowed not only showed no increased production for 3 years in a row, but showed decreased production. The reason why could not be fathomed in the past, but as a result of this general soil survey, it was found that the layer of clay beneath the surface of the soil was very shallow, and that the deep plowing had broken through this clay layer allowing loss of water and loss of fertilizer. These methods have since been changed.

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HAIL DAMAGE--On 1 September 27 counties in Shandong Province's Yantai, Changwei, Dezhou, Jining and Huimin Prefectures and Jinan Municipality were hit by a 12-grade gale and hailstorms. Six counties, including Ye, Bin and Changqing, suffered heavy losses. Provincial, prefectural and county party and government organs at all levels are conducting relief work in these areas. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 4 Sep 80]

CSO: 4007

BRIEFS

VEGETABLE SUPPLY--The recent meeting of the secretaries of the various county CCP committees of Shanghai, sponsored by the Shanghai Municipal Commission of Agriculture, approved the proposal to produce 1.17 million dan of vegetables in grain and cotton fields through intercropping in the various counties to ease the supply of vegetables. It is estimated that the newly-planted vegetables will be available at markets around the 1980 [as heard] spring festival. [Shanghai City Service in Mandarin 2300 GMT 5 Sep 80]

CSO: 4007

SEEDLING CULTIVATION TECHNIQUES IMPROVED

Chengdu SICHUAN RIBAO in Chinese 3 May 80 p 2

[Article: "Prefectures in East and South Sichuan Improve Seedling Cultivation Techniques"]

[Text] Remarkable achievements have been made in eastern and southern Sichuan Province prefectures after taking firmly in hand improvement of paddy rice seedling cultivation, thereby laying a foundation for increased output of paddy rice.

Widespread backwardness in seedling cultivation techniques is the principal reason for low rice production in the eastern and southern prefectures of Sichuan Province. In order to change this situation, every locale has taken in hand as a major measure the improvement of seedling cultivation in order to realize increased rice output this year. Leadership on all echelons has plunged into the front line, has investigated and studied, has summarized and promoted advanced experiences, and has promptly discovered and solved problems in the improvement of seedling cultivation. Additionally, each locale has adopted various forms of training of technical forces and has widely disseminated new technology for seedling cultivation. Statistics show that a total of more than 1.052 million cadres and commune members have been trained by various locales. In the cultivation of seedlings, a system of responsibility has been universally established, and through assignment of tasks and clearly defining rewards and punishments, a vast improvement in the quality of seedling cultivation has been effected. In the 7 prefectures and municipalities of Jiangjin, Wanxian, Fuling, Yibin, Daxian, Chongqing, and Zigong, statistics show that this year's area of moist seedling fields is more than 60 percent of the total, and that quantity of seeds sown per mu of seedling fields declined from last year's 120 to 180 jin to from 60 to 100 jin. Building of 19,000 hothouses has had greater development than in the past. In Daxian Prefecture, a heartening phenomenon of "five increases and five decreases" occurred this year, meaning that fine varieties increased while inferior varieties decreased; moist seedling fields increased while water-covered seedling fields decreased; cultivation of seedlings in hot houses increased while the old method of cultivating seedlings decreased; the area of seedling fields increased while quantity of seeds used per mu decreased; tillering of sturdy seedlings increased while wispy seedlings decreased.

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RICE YIELD RAISED IN LESHAN

Chengdu SICHUAN RIBAO in Chinese 3 May 80 p 2

[Article: "Leshan Prefecture Strives To Increase Paddy Rice Output from Low Yield Fields"]

[Text] Leshan Prefecture has acted quickly to adopt effective measures to increase output from low yield fields, insuring increased production of paddy rice over a wide area.

While taking in hand its paddy rice production, the Leshan Prefecture CCP Committee has paid extreme attention to increasing the output from low yield fields in order to promote balanced increases in yields. The prefecture CCP committee showed that low yield fields throughout the prefecture fell into three general categories. One is 400,000 to 500,000 mu of fields that perennially have "sitting autumn" where per mu yields are generally more than 200 jin lower than other fields. The second is 1 million mu of wheatfields where some of the land became seriously saturated as a result of heavy autumn rains last year and where, unless prompt control measures are taken, the rice is very likely to produce low yields. Third is several hundred thousand mu of rice seedling beds where plowing and harrowing is commonly done poorly, and where basic fertility is slight and the quality of plantings poor with the result that output is also low.

In order to find ways to increase rice output from these three categories of fields, leadership comrades in the prefecture CCP committee delved into rural villages to conduct inspections and to study. Agricultural departments also sent cadres for a conscientious summarization of the experiences of the masses, and measures were then proposed in accordance with all findings. In the case of the sitting autumn fields, nursing of healthy seedlings was proposed in light of the depth of mud in the fields, the long period of stagnant water, the low temperature of the soil, the tenderness of the seedlings, and the heaviness of nitrogenous fertilizer applications. These measures included sunning the fields to raise temperatures (planting of seedlings in shallow water early in the season with shallow water and sunning of the fields in the late season), and changes in the composition of fertilizer (changing heavy

applications of nitrogenous fertilizer to heavy applications of potash and phosphate fertilizers).

At the present time, in every locale throughout the prefecture, quality of seedlings has been enhanced through the propagation of sturdy seedlings. Applications of reasonable amounts of fertilizer, applications of sufficient base fertilizer, and vigorous production of ammonia water has been done in an effort to increase per unit yields from low yield fields. In Jingyan County where the area affected by sitting autumn is large, the composition of fertilizer applications has been completely readjusted. The fertilizer from farm families set aside for use on drylands is mixed with potash fertilizer and put on the fields in order to increase the phosphate content of the fields, and to increase the temperature of the soil. Currently, wet fields throughout the county to which fertilizer has already been applied amounts to more than 65,000 mu. In order to satisfy the needs of wheat fields, every nitrogenous fertilizer plant is working day and night to produce ammonia water. The Renshou Nitrogenous Fertilizer Plant alone has now produced and supplied more than 6,000 tons of ammonia water to rural villages, more than double the amount for the same period last year.

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AGRICULTURE NOTICE--The Sichuan Provincial People's Government issued an urgent notice on overcoming rain and doing a good job of the three categories of autumn farmwork. The notice pointed out that it is necessary for various areas to urgently mobilize, reap the ripe rice, corn and cotton and store them well. All the production teams must pay attention to intensive and meticulous harvesting, reducing waste and tending fields. The quantity and quality of cotton must also be improved. Field tending of late autumn crops must be strengthened. The leading organs and agricultural departments at all levels must regard the three categories of autumn farmwork as the central task in the countryside. At the same time, all the effective systems of production responsibility must also be implemented. [HK041216 Chengdu Sichuan Provincial Service in Mandarin 2300 GMT 29 Aug 80]

CSO: 4007

BRIEFS

MOUNTAIN SURVEY--Urumqi, August 22 (XINHUA)--Chinese scientists have discovered that there are reserves of 3,500 hundred million cubic meters of snow and ice over the 2,700 square kilometers of glaciers on Mount Tomur. The mountain, the highest peak in the Tianshan range in Xinjiang, Northwest China, rises 7443.8 meters above sea level. This important discovery was made by a scientific survey expedition of the Chinese Academy of Sciences. Mount Tomur supplies 35 hundred million cubic meters of water annually to the surrounding areas and has great impact on industry, agriculture and livestock breeding. [Beijing XINHUA in English 0703 GMT 22 Aug 80]

GRASSLAND RESERVES--Urumqi, 4 Sep--Xinjiang has become a production center for livestock fodder grass reserved for winter use. The Xinjiang Autonomous Region has more than 6 million mu of paddocks, 2.4 million mu of irrigated grassland and 1.8 million mu of improved grassland. Yili, Tacheng and Altay Prefectures are making efforts to build pastures for winter and spring use. Winter and spring fodder shortage usually kills 70 or 80 percent of the livestock in those prefectures. [OW111427 Beijing XINHUA Domestic Service in Chinese 0710 GMT 4 Sep 80]

MELON, FRUIT HARVESTS--Urumqi, 11 Sep (XINHUA)--Farms in Xinjiang Uygur Autonomous Region have reported good harvests of melon and fruit this year. The harvest of honeydew melons and water melons was 610,000 tons, 20,000 tons more than last year, and the grape yield also increased. Xinjiang, with long hours of sunshine and low humidity, produces high-quality melons and other fruits that are prized throughout China. The most notable are seedless grapes from the Turpan Depression, melons, pears, apples, pomegranates, figs and walnuts. [Text] [OW111427 Beijing XINHUA in English 0720 GMT 11 Sep 80]

CSO: 4007

BRIEFS

FORESTRY STIPULATIONS--The Yunnan Provincial People's Government has formulated stipulations on protecting forestry resources and developing forestry production. The stipulations were adopted by the fourth session of the Fifth Standing Committee of the Yunnan Provincial People's Congress on 19 August 1980. Altogether there are 10 stipulations, which include the implementation of the ownership of forestry, the establishment of the system of forestry management, strengthening of the work of protecting the natural areas, strict prohibition of destroying forests to open up more land, control of timber production and legal operation of the forests. [Kunming Yunnan Provincial Service in Mandarin 1100 GMT 30 Aug 80]

CSO: 4007

COMMUNES, BRIGADES MUST DO BETTER JOB OF MANAGING FUNDS

Hangzhou ZHEJIANG RIBAO in Chinese 25 Jul 80 p 2

[Article by Hua Wenlie [5478 2429 3525] of the Fuyang County Agricultural Office: "Communes and Brigades Must Manage and Use Capital Well"]

[Text] A recently launched commune and brigade fiscal examination of the four areas of Qingyun, Dayuan, Xindeng and Longyang in Fuyang County has uncovered serious gaps. Deficiencies in the management of cash and discrepancies between actual reserves on hand and ledger entries were particularly commonplace. A check of 177 units in Qingyun district showed 225,994 yuan on the ledgers but only 55,406 yuan of actual cash (including savings), or only 24.7 percent of the total. Disarray in commune and brigade funds was the main reason for shortfalls in circulation funds, and this directly impaired the growth of agricultural production and the enthusiasm of commune members. How can commune and brigade funds be well managed and used? In the experience of some communes and brigades, the following tasks are very important in addition to a strict fiscal system.

The first is enhanced control over cash. Cash receipts and disbursements must be promptly entered into the accounts, regularly checked, with no I.O.U.'s allowed, so that the ledgers balance. A limit on cash reserves has to be set, with a requirement for transfers to settle accounts. Backing has to be given to carrying out required supervision by credit cooperatives over the management of commune and brigade cash. This is an important measure for the prevention of the jumbling together of funds.

The second is "special depositor" accounts. In the use of funds, there has to be a system of return to rightful owner. Presently, some communes and brigades use the "common pot" method in the management and use of funds, with no clear idea of whom collectively held resources belong to. Accumulation funds are merely figures where there are, in fact, no savings. In some cases they have actually been in the red. This "muddling through" has to be changed. Conditions must be actively created for implementation of "special depositor" savings accounts so that accumulation funds, public welfare funds, grain reserves, production expense funds, depreciation expenses and commune members' living expenses (anticipated cushion funds)

can be deposited separately, and special purpose funds will be used for the special purposes intended. In this way there can be planned use of monies.

The third is a strengthening of internal settlement of accounts. The form and method for internal settlement of accounts among units may be either the "internal bankbook" (similar to the old "money bankbook"), or it may be a "settlement sheet." In dealings among commune members, the "work manual" or the "commune member's monthly settlement sheet" may be used, or else "price certificates" may be issued. Each commune member depositor may be issued with a certain quantity of "price certificates" for the quantity of disbursements due him (except for grain) on the basis of "annual early notification," and distribution of money or goods will be made against these certificates. This procedure will make it easy for commune members to keep a record and will make the settlement of accounts easy, with benefits for adhering to the planned distributions according to "early notification," and benefits for controlling disbursements when there are no reserves to disburse or excessive disbursements.

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CONSERVE FARMLAND WHEN BUILDING HOUSES

Hangzhou ZHEJIANG RIBAO in Chinese 23 Jul 80 p 2

[Article by Wang Weizhang [3769 4885 2874] of the Provincial Construction Commission: "Care Should Be Given to Conservation of Farmland When Building Houses in Rural Villages"]

[Text] As agricultural sideline production has increased, peasant income has increased, and as commune and brigade enterprises as well as cultural and welfare endeavors have grown during the past several years, more and more houses have been constructed in rural villages. This is a fine situation. However, there is a problem common to the construction of housing in rural villages, and that is a lack of unified planning with excessive use of farmland. This should arouse a high degree of serious attention on the part of the leadership at all echelons in rural villages.

In our country, where land is scarce and people are numerous, the land is extremely precious. Ever since the founding of the People's Republic, every effort has been made to arouse the masses everywhere to open up new farmland, but because of requirements for the growth of economic construction, and for other reasons which have to do with the use of land, a very great actual decline has taken place in the area of farmland throughout the province. Between 1957 and 1978, a reduction of 3.6 million mu of farmland occurred throughout the province, for an average annual decline of 170,000 mu, and it is the construction of houses in rural villages that currently uses up most of the farmland. Last year in Hangzhou Prefecture, state capital construction took over more than 5,900 mu of land, while construction of houses by communes, brigades, enterprises and commune members took more than 57,000 mu, accounting for 90 percent of the use of land for construction. The laissez-faire and unrestrained situation in the use of land for the construction of houses makes for much land utilization and great waste. Unless there are strict controls, the already scant farmland in our province will continue to decrease, with inevitable impairment of the growth of agriculture. Therefore, in order to conserve the use of land for construction, it is necessary both to continue to restrict use of land for state capital construction, and to effectively strengthen leadership and management

over house construction in rural areas, treasuring the land and conserving its use in the construction of houses.

Can land be conserved when houses are built in rural villages? On the basis of commune and brigade experiences in the construction of new villages at test sites, with unified planning and a reasonable layout pattern, not only can land be saved but the farmland area can be enlarged. Formerly the hamlet where Yuanfu Commune is located in Hangzhou City was very small, but some commune members had individual family homes and the houses were widely scattered, using much land. Within the past few years they have made unified plans, combining the regulation of watercourses and improving the soil to build a new village, converting the land on which the old houses formerly stood into farmland, for an increase of 500 mu in the amount of farmland. The Yinyong Brigade in Yin County cut into a mountain and filled in ravines to build a stretch of new homes over an area of more than 40,000 square meters. They also built a school on the slope of the mountain and increased the amount of farmland by 65 mu. According to statistics from 6 commune and brigade test sites, the farmland area increased by 899 mu following construction of new villages, for a 2.9 percent increase in farmland. Generally speaking, conservation of farmland in the construction of houses takes the following several forms: First there is good planning and distribution of homes. The amount of land to be by commune members for the construction of houses, the size of compounds, the distance between houses, and the widths of roads need to be discussed in a democratic way, with reasonable standards being set so as to avoid dispersal of construction and a waste of land. Second, in cases where old villages are transformed, changes in construction of the old villages are made without using additional land. Third, every effort is made to use slopes, infertile land and wastelands, with villages being built in mountainous and semimountainous areas where land is made suitable for the construction of houses. Fourth, there is planned concentration, as suitable, of several small villages or individual houses, with the places where the houses formerly stood being converted to farmland. Fifth, there is construction of multistory buildings, where conditions permit, with a reduction in the construction of single-story houses.

The key to good performance in this regard is the strengthening of leadership. At every echelon of party and government departments, particularly in the leadership of counties, communes and brigades, construction of houses in rural villages has to be placed on the agenda and an end put to laissez-faire. Communes and brigades have to be organized to plan housing construction on the principles of benefits to production, convenience for living and conservation of land. Collectively constructed commune and brigade housing, as well as housing constructed by individual commune members, must be built according to unified planning in order to avoid disorderly construction and indiscriminate use of land. Commune members must be taught to distinguish correctly between present benefits and long-range benefits and the relationship between production and livelihood, so that in the construction of houses to improve their living conditions, they will also conserve land and insure increased agricultural output.

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DIVERSIFICATION NEEDED IN LIVESTOCK PRODUCTION

Hangzhou ZHEJIANG RIBAO in Chinese 20 Jul 80 p 2

[Article by Commentator, "Diversification Needed in Development of Livestock Production"]

[Text] Just as development of the farming industry requires diversified operations, so too does the development of the livestock industry require steady diversification. It is not enough to raise only hogs, but cows, sheep, rabbits and poultry have to be raised too in order to give full play to each and every advantage, to hasten the development of the livestock industry, and to satisfy the country's needs for draft animals and for animal products so that we can become prosperous more rapidly.

Last year, total output value from the livestock industry in Zhejiang Province amounted to 14.5 percent that of the total output value of agriculture. The source of 83.3 percent of income from the livestock industry was hogs while output value from the sale in international markets of hides and furs was only 6.9 percent. The low ratio of the livestock industry to agriculture, and the lack of a rational internal composition in the livestock industry both demonstrate that one major way to develop the latent potential in livestock production is steady development of diversification. Full development of grazing resources in Zhejiang Province also awaits the development of diversification in livestock. According to a preliminary survey, of the more than 10 million mu of grass-covered mountains and slopes in Zhejiang Province, almost 6 million mu has bush forests and sparse woods. On a scale of 100 for pasture grasses, annual per mu output of fresh grass from grassy mountains and slopes would amount to more than 10,000 jin. Given such a product abundance, and a "plant protein processing plant" of impressive natural output capacity, if only we will emphasize their use and actively develop grass-eating livestock for many kinds and qualities of grasses, incalculable amounts of meat, hides, furs and milk can be had, and this is a tremendous wealth. The ancients said, "Attend to the raising of livestock and inquire into what is fitting for the soil. When the six domestic animals are raised and the five grains grown, wealth will increase." This is what is meant.

Ever since the implementation of the spirit of the Third Plenum of the 11th Party Central Committee, the development of the livestock industry in Zhejiang Province in the direction of diversification has taken a heartening step. There has been renewed development of Tiantai small gouniu [3699 3662] of Linhai milk goats, of Xinghang longhaired rabbits, and of the great white geese of eastern Zhejiang. These animals and poultry have diverse uses, but all greatly increase the income of commune members, make the economy prosper, and some of them have become "fist" goods as items exported by the state, which have brought in large amounts of foreign exchange.

In the advocacy of diversified development of livestock production, we must be realistic in giving play to local advantages. Recently Qintian County began a survey of its pasture grass resources, discovering 55 different kinds of grassland plants of which more than 10 existed in large amounts and were highly valuable for use as livestock feed. On the basis of their findings about grazing grasses, they formulated their own plans for the development of the livestock and poultry industry. In Yunhe County where there are different kinds of grasses, several kinds of livestock product commodity bases have been planned. On medium and gentle slopes with a covering of vegetation and on low mountain grasslands, they have developed cattle raising. On steep inclines with mixed grass and tree cover, sheep are being raised. Miscellaneous grass patches are being used primarily to feed rabbits. This method of taking account of local realities for total development of the livestock industry deserves to be advocated elsewhere.

In order to implement a diversification of operations, there has to be a diversification of economic forms as well. The quality of management makes a difference as to whether economic results will be large or small. Collective livestock forms may be operated or households may be encouraged to own and raise livestock themselves. A system of public ownership and public raising may be adopted, or there can be raising by special households. In short, the method must be beneficial in giving play to the special skills and knowledge of individuals and households, and be beneficial to a further tapping of latent potential to obtain economic benefits from a small amount of investment that sees results quickly, and at low cost.

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EARLY RICE VARIETIES SELECTED--The recently held Provincial Early Rice Fine Varieties On-Site Selection Conference acknowledged that the "Erjiuqing," "Yuanfengzao," "Zhongganzao," and "Guangluqi No 4" varieties, which are so widely used in Zhejiang Province, have for many years exhibited characteristics of consistent and high yields and are still desirable dominant varieties. They recommended that every locale adapt methods to local conditions and select them rather than make changes lightly. Output from "Qingganhuang" is almost that of "Guang Laui No 4." Furthermore, it ripens 1 or 2 days earlier, has rice of good quality, a high rate of output, and is a very promising fine variety. The on-site selection conference also made an evaluation of some new varieties that have made their appearance for the first time. They were "Sihai No 2," "Shuangke No 1," "Zhuguang 23," and "Qinglian 16." They felt that further widespread test planting of these varieties would be desirable. The conference also drew everyone's attention to purification and rejuvenation work, mindful that given the relatively consistent state of the dominant varieties, this was a way to extend the limit on the number of years varieties could be used, and a major measure for giving full play to the heterosis of fine varieties. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 29 Jul 80 p 2] 9432

NEW LATE RICE VARIETY--The new variety of late crop rice, "Aigeng 23," which was bred by scientists and technicians at the Paddy Rice Institute of the Provincial Institute of Agriculture, has been tested during the past several years in areas throughout the province. Comparative experiments with plantings over wide areas, and test plantings in different agricultural areas have demonstrated that in comparison with the existing dominant late rice varieties, "Nonghu No 6," and "Jiahu No 4," "Aigeng 23" is more resistant to lodging, has larger panicles and more numerous grains, is more resistant to bacterial blight and blast of rice, and has per mu yields that are from 5 to 10 percent greater. It has been enthusiastically received by the masses. Last year more than 300,000 mu of it was planted throughout the province, and this year a rapid extension of its cultivation will take place. In Shangyu and Zhenhai prefectures, it has become the dominant late crop rice variety, and provincial authorities concerned have made it a superior variety

for promotion throughout the province. "Aigeng 23" is a late-maturing late crop geng rice. It has aroused the attention of the International Rice Institute as well as that of Japanese and other foreign researchers because of the short stem xian rice in its genetic makeup. This variety has a rather long vegetative growth period. In northern Zhejiang Province, total length of growing period is around 140 days; in southern Zhejiang it is about 125 days. According to statistics from some of the units that planted 3,230 mu of it in 6 counties last year, "Aigeng 23" averaged per mu yields of 816.8 jin, and per mu yields of more than 1,000 jin accounted for about 5 percent of this. Per mu yields of from 800 to 1,000 jin amounted to more than 50 percent. On slightly more than 4 mu at the Provincial Agricultural Institute's Test Farm, single transplantings of one crop of rice averaged an output of 1,184 jin per mu. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 25 Jul 80 p 3] 9432

EGG PRICE CHANGE--In the spirit of State Commodity Price Bureau and Ministry of Commerce notification, together with the realities of Zhejiang Province, and following agreement by the Provincial Commodity Price Committee, the Provincial Department of Commerce has decided that beginning on 21 July further readjustment will be made in the seasonal price difference for fresh eggs. Throughout the province, the average selling price for chicken eggs will be readjusted from the current .88 yuan per jin to .79 yuan per jin. Once the seasonal price difference for fresh eggs has been adjusted, the award price policy established by the state for state procurement of fresh eggs will not change. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 21 Jul 80 p 1] 9432

RURAL SAVINGS--Savings by commune members in rural villages in our province increased by 167 million yuan during the first half of the year, doubling the figure for the same period last year. As of the end of June, savings from rural villages taken in by agricultural banks and credit cooperatives throughout the province amounted to 769 million yuan, or an average of 22 yuan per villager--an increase of 6 yuan over the end of last year. In Zhenhai County, where savings were greatest, average per capita savings amounted to 70 yuan. In Ningbo municipality and in Haining and Shengsi counties, average per capita savings were more than 50 yuan and more than 60 yuan, respectively. Throughout the province there are also quite a few brigades with savings in excess of 10,000 yuan, and communes with savings of more than 1 million yuan. The main reasons for this tendency toward the rapid growth of savings in rural villages in our province during the first half of this year are the increase in the economic income of peasants and a further increase in April in the interest rate on savings. Additionally, agricultural bank and credit cooperative employees have launched an active savings campaign and have striven to provide good service. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 27 Jul 80 p 1] 9432

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AUTHOR: ZHANG Shuzhen [1728 2885 2830]
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ORG: Both of the Beijing Agricultural University

TITLE: "Some Problems Concerning the Breeding of Winter Wheat Cultivars Resistant to Rust"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 2, Jun 80 pp 75-84

TEXT OF ENGLISH ABSTRACT: Based on 30 years of experience in the development and extension of rust-resistant wheat cultivars, several important problems concerning this work were discussed.

1. Analysis of parentage of the released wheat cultivars showed that the dosage of good parents with high yielding capacity and adaptability in crosses, especially in multiple crosses, should not be less than one-half. In choosing or using rust-resistant parents, varietal properties pertaining to the tolerance to adverse environmental conditions would also be of importance.

2. The prerequisite for success in breeding wheat for rust-resistance in the choice of parents and making the best possible combinations. The size of the

[Continuation of ZUOWU XUEBAO No 2, Jun 80 pp 75-84]

segregating population should be as large as possible within the limit of the facilities. It was considered feasible to discard crosses on the basis of F_2 yield trials as well as to discard lines on the basis of two successive early generation progeny tests. The kernel weight form single spike could be considered as a criterion for high yielding ability, with an adequate number of spikes per unit area as a prerequisite, in the development of high-yielding cultivars under conditions of high fertility and good irrigation. The importance of field inoculation and green house seedling tests with several prevailing physiological races of the rust pathogens in segregating generations was also stressed.

3. The experiences from the extension of three cultivars pointed out that whether a new cultivar could meet the requirement of the cultural practices when it would be released was an important factor of its acceptance by the farmers. Consequently, special care should be paid to the level of fertility and management of the experimental plots. Another point was that the new cultivars should be released in batches so that the farmers could make their own choice among them.

4. The evaluation of recent introductions of breeding materials, the creation of our own breeding stocks, the utilization of intermediate products, genetic studies of rust resistance and the use of horizontal resistance were also discussed.

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TITLE: "The Use of a Dominant Male-Sterile Gene in Wheat Breeding"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 2, Jun 80 pp 85-93

TEXT OF ENGLISH ABSTRACT: A male-sterile plant whose anthers contained "no pollen grain" was found in a Chinese wheat cultivar (T. aestivum L.). Microsporogenesis breakdown occurred after the tetrad stage. The F_1 of this plant and its progenies in succeeding generations always segregated into male-sterile and male-fertile plants in equal proportions. When a male-sterile segregate was crossed with any normal male parent, there was always a clear-cut one-to-one segregation of male-sterile and male-fertile plants. All the male-fertile offspring bred true in every case. Thus far, no intermediate types were found in the segregating materials. It was suggested by the authors that a heterozygous dominant male-sterile gene was involved in the inheritance of this character.

[Continuation of ZUOWU XUEBAO No 2, Jun 80 pp 85-93]

The cytoplasm of this original plant was normal. A gene symbol Ta_1 was assigned and the genotype of the original male-sterile plant is (N) Tata. A breeding program of recurrent selection by using this gene is herewith proposed.

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TITLE: "Heritability Estimates from Different Selection Methods in Rice Breeding"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 2, Jun 80 pp 99-110

TEXT OF ENGLISH ABSTRACT: A study was made on the heritability of major economic characters in F_3 and F_4 progenies of rice hybrids raised under different methods of breeding. The results are summarized as follows:

1. The effectiveness of the bulk method of breeding depends to a great extent on the intensity of selection of individual plants in hybrid populations. As heritability estimates from the bulk method of breeding were still low even in F_4 owing to high values of M (E/D) and K (H/D) in the components of population, selection intensity for the characters with low heritability should be lowered to a reasonable extent.

2. In the pedigree method of breeding, selection of groups and families usually commences with F_4 progenies. Among the five crosses studied, heritability estimates in most cases were higher between groups and lower between families

[Continuation of ZUOWU XUEBAO No 2, Jun 80 pp 99-110]

within groups. Therefore, in the selection of F_4 progenies emphasis should generally be laid on groups, i.e., selection among groups rather than among families. However, comparatively high heritabilities within groups for all characters investigated were observed in the distant varietal cross 853/Norin 20, and in such instances selection of families within groups should be of primary importance.

3. For most characters studied, correlations between F_{2-2} and F_{2-1} and regressions of F_{2-2} on F_{2-1} were significant at either $P_{0.05}$ or $P_{0.01}$ level, indicating that selection of F_2 derived lines was effective and desirable. (Note: F_{2-2} and F_{2-1} represent second generation and first generation families of F_2 derived lines respectively.)

4. It should be noted that heritability values of a character varied with the methods of estimation used and the reliability of heritability estimates could be determined by comparing the genetic gains predicted with those actually obtained in the selection experiment. In the present study, heritability estimates for early generations from both correlation and regression formulae were shown to be more reliable than other methods. When the environmental conditions between parent and progeny generations were more or less alike, regression method would be more accurate than correlation method; otherwise correlation method tended to be more practical.

AUTHOR: CHANG Ruzhen [1603 3067 6966]

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TITLE: "Studies on Heritability and Correlations of Several Agronomic Characters in Soybean Crosses"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 2, Jun 80 pp 111-118

TEXT OF ENGLISH ABSTRACT: An estimation of heritabilities and genetic correlations in F_2 populations and F_3 progenies of three crosses of different types of soybeans was made in 1964-65. These crosses were Amur No 41 x Shengao (Glycine max), Amur No 41 x Semi-Cultivated Yellow Soybean (G. gracilis) and Fengdehuang x Wild Soybean (G. soja).

The heritabilities of several important agronomic characters of soybeans were estimated by three different methods. Results of such evaluation showed that values of heritability estimated by the broad sense method were the highest, those by the correlation method were the lowest and those by variance analysis method were intermediate. The heritabilities of time of flowering, date of maturity and plant height were the highest, those of number of nodes of main

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stem and weight of 100 seeds ranked next, while those of number of branches were the lowest. Therefore, during the early generations of soybean crosses, characters with high heritability, such as date of maturity and plant height, can be selected rigorously.

In general, genotypic correlations were higher than the phenotypic correlations. Correlations between number of pods per plant and date of maturity, plant height, number of nodes of main stem and number of branches were positive and significant. Environmental correlations among the characters studied were generally not significant.

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TITLE: "Cultivating Sturdy Rice Seedling by Blue Light"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 2, Jun 80 pp 119-123

TEXT OF ENGLISH ABSTRACT: An experiment was carried out to study the effects of various light qualities on morphological and physiological characters of rice seedlings. The results obtained are as follows:

1. The plant height was remarkably enhanced by red light but depressed by blue and yellow ones.
2. The chlorophyll content was increased by blue light.
3. The soluble sugar, starch and cellulose contents of rice seedlings were increased by blue light. Therefore growth of rice seedlings was strongly influenced by light quality.
4. The blue light promoted the photosynthetic activity, but the photorespiration and CO_2 compensation point were increased by red and colorless light.
5. When the plants in the nursery stage were covered with blue film, the number of tillers was increased until 50 days after transplanting, while red

[Continuation of ZUOWU XUEBAO No 2, Jun 80 pp 119-123]

light slightly stimulated the formation of tillers.

It was suggested that the blue light could be used to raise sturdy rice seedlings in the rice nursery bed.

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ABSTRACTS

PLANT PROTECTION

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1. GENERAL INFORMATION

NECESSITY OF INTENSIVE FARMING DISCUSSED

HK170945 Beijing JINGJI YANJIU [ECONOMIC RESEARCH] in Chinese No 8, 20 Aug 80 pp 42-46

[Article by Feng Baolin [7458 1405 2651], Beijing Agricultural College: "Intensive Farming Is the Fundamental Way To Develop Agriculture"]

[Text] I. The Necessity and Feasibility of Intensive Farming

There are two ways of developing agriculture: extensive farming and intensive farming. The former is carried out under conditions where the technological level is comparatively low and the investment of production material and labor per unit area of land is comparatively small. The latter is carried out where the investment of production material and labor per unit area of land is comparatively large and advanced technological measures are adopted. Marx said: "In economics, so-called intensive farming entails concentrated use of capital on the same areas of land and not dispersed use on some areas of neighboring land." (Marx: "Das Kapital" Vol 3, p 760, The People's Publishing House, 1975) In his works about land, Lenin further explained the meaning of intensive farming: To use more means of production and labor on certain areas of land. For example, to use more fertilizer and pesticide and to use fine strains, advanced agronomy, advanced fodder processing technology and new production tools and to improve management. (Collected Works of Lenin, "New Material on the Law of the Development of Capitalist Agriculture" Vol 22, pp 24-30) The purpose of intensive farming is to achieve more yield per unit of farmland with less labor and less consumption of the means of production. That is to say, the purpose is to constantly increase land productivity. This is the fundamental way of developing agriculture. Intensive farming is necessary because of limited farmland and it is possible because of unlimited soil fertility. As land areas are absolutely limited, it is impossible to meet the increasing demand for farm products by society and people through unlimited expansion of cultivated areas. Such a demand can only be solved through intensive farming to increase land productivity. Is it possible to increase farm output through intensive farming to improve land productivity? Objectively, it is

possible because of unlimited soil fertility. As we know, according to its formation and role, soil fertility can be divided into natural fertility and artificial fertility, or effective fertility and potential fertility. Natural fertility is formed by many factors such as the nature of the fertility itself, weather, organisms and topography during the natural development of the soil. Artificial fertility is formed by artificial factors such as ploughing, application of fertilizer, irrigation and soil improvement. The fertility that can be absorbed by plants is called effective fertility. The fertility that cannot be at once absorbed is called potential fertility. The labor of mankind not only turns potential fertility into effective fertility but also constantly increases effective fertility through effective measures. Therefore, as long as we pay attention to the use and care of farmland and take proper measures, natural fertility will not be exhausted while artificial fertility will continue to increase. In this way, we will be able to increase effective fertility by a big margin and achieve more and more potential fertility. Marx said: "Fertility is an objective property of soil, but from the viewpoint of economics it is always related to the present level of agro-chemistry and agricultural mechanization. So when the level changes, the fertility will also change." (Marx: "Das Kapital" Vol 3, p 733) This means that soil fertility is an objective reality, but to increase it, it is imperative to take various measures. In addition, with the development of science and technology and productivity, the more the soil is used, the more fertile it becomes and the higher its output. Therefore, it is clear that intensive farming and improvement of soil fertility are the basic ways of developing agriculture. It has been proven in our country and abroad. The history of the development of agriculture in many countries shows that despite differing situations and adoption of different methods, in every case agriculture has undergone a process of development from extensive farming to intensive farming. The level of intensive farming in some advanced countries has developed rapidly, particularly since the beginning of the 20th century. That is why Lenin said: "In Europe, the development of agriculture mainly depended on intensive farming and on the expansion of cultivated areas. It depended on improving the quality of ploughing and increasing investment on the existing farmland. Such is the main principle for developing capitalist agriculture. This will also gradually become the main principle in the United States of America." (Collected Works of Lenin, "New Material on the Law of the Development of Capitalist Agriculture" Vol 22, p 58) Lenin's words have been vindicated by the actual development of history. The United States of America is a vast country with a small population. Before 1920, U.S. agriculture mainly relied on extending cultivated areas. During the 56 years from 1866 to 1920, cultivated areas in the United States increased from 1 billion mu to 2.4 billion mu, and grain output tripled. Apparently after 1920 the acreage did not increase; but because of the introduction of intensive farming to increase soil productivity, agricultural output doubled, particularly after the 1950s. Grain output increased to 523 billion jin in 1977 from 281.4 billion jin in 1950; cotton increased from 43.42 million dan to 63.14 million dan

while meat increased from 12.2 million tons to 25.65 million tons. The output of 52 varieties of crops increased by an average of 64 percent. The output of cotton increased from 313 jin in 1950 to 760 jin in 1977 per mu. Thus in 27 years, cotton output increased by one and a half times thanks to the popularization of hybridization, more fertilizer and the use of herbicides. The per-mu output of wheat, rice paddy and cotton also increased considerably. Japan, with little land and huge population, has paid special attention to intensive farming. During the 30 years after World War II, Japan spared no efforts in improving soil (farm capital construction), with water conservation projects as the key, in applying more chemical fertilizer, using fine strains, carrying out scientific research, promoting advanced technology and carrying out farm mechanization. Japanese per unit area grain output was 395.5 jin in 1946, 563.4 jin in 1960 and 741 jin in 1975. Over the past 3 decades and more after liberation, the level of intensive farming and soil productivity in our country increased considerably. Visible results have been achieved in our farm capital construction. The acreage under irrigation has increased to over 700 million mu, double the figure of the early liberation days, and constitutes 48 percent of the total acreage under cultivation. The acreage under mechanized cultivation accounts for 41 percent of the total while 70 jin of fertilizer is applied per mu of field. Great progress has also been made in various branches of agricultural scientific technology. As a result, farm output has increased considerably without expanding cultivated acreage. Such situations show that intensive farming to increase soil productivity is an inexorable trend in various countries for developing their agriculture.

II. The Significance of Intensive Farming and How To Intensify It

It is very important for our country to carry out intensive farming and increase soil productivity.

First, we have little cultivated area and low per unit output; our agricultural output is not in a position to meet demand. The average land acreage and the average cultivated acreage per capita in our country are only about one-third of the world average. In addition, the reserves of our land resources have little potential. The areas of arable land are limited and they are located in remote regions and on sandy terrain. Therefore, huge investment and much equipment is needed to reclaim these areas; it is not an easy job. Even if all the arable land is reclaimed, the average amount of cultivated acreage per capita is still less than most countries in the world while the situation of a huge population and little land will remain unchanged. In addition, the per unit area output in our country is not high, statistics for 1977 showed that based on the cultivated acreage, the per mu grain output was 491 jin and when based on shown areas, it was only 313 jin, lower than many countries. Only through intensive farming and improving soil productivity can we make up for the shortage

of cultivated acreage and increase farm production to meet the needs of the people and the state. The role of agriculture as the foundation of the national economy must be fully displayed to develop socialist construction.

Second, our scientific and technological level and our ability to fight natural disasters are still low and we are still largely dependent on the natural environment. To practice intensive farming, apply more fertilizer, pesticide and herbicide, use advanced farm machinery, plastic sheets and other industrial products, materialize water conservancy projects and use advanced science and technology will help people to understand and use objective laws, gradually free themselves from the control of the natural environment, strengthen their ability to control the natural environment and promote symbiosis between organisms and environment. In this way, people will be able to fight natural disasters such as drought, floods and pests and diseases and insure higher and stable yields.

Third, our country's production level is low, the contradictions in the use of land for agricultural production are very serious and the structure of production is irrational. Because our cultivated land is limited, serious contradictions exist between agriculture, forestry, animal husbandry, sideline production and fisheries, on which crops are best suited to which land and between the use and care of the land. It is because of such contradictions that the location of farm production is not rational, agriculture, forestry, animal husbandry, sideline production and fisheries are out of proportion and the production of economic goods is affected. Of the gross agricultural output value in 1977, sown crops accounted for 67.5 percent, forestry 3.1 percent, animal husbandry 13.7 percent, sideline production 14.1 percent (11 percent were industries run by the people's communes and production brigades), and fisheries 1.5 percent. There was a larger increase in gross agricultural output value over the past 2 years but the disproportionate relations between agriculture, forestry, animal husbandry, sideline production and fisheries basically remain unchanged. The production of economic crops and crops for fertilizer is still affected by the production of grain. The practice of intensive farming to fully tap soil potentials and increase per unit area yield will gradually solve the above-mentioned contradictions, promote the all-round development of agriculture, forestry, animal husbandry, sideline production and fisheries, comprehensively develop agriculture, industry and commerce and increase the level of socialization. In this way, our country will be able not only to produce stable and high yields but will also be characterized by a beautiful natural environment. Intensive farming covers many aspects, such as changing the structure of production and the composition of crops, developing many varieties of crops, increasing the multiple crop index and making full use of soil resources; transforming the farming system so as to combine utilization of the land with caring for it; carrying out farm capital construction to set up fields with stable and high yields; and comprehensively harnessing

mountains, rivers, fields, forests and roads. In this way, we will be able to use more means of production and laborers on certain areas of land with better economic results. The basic way to improve intensive farming is to use modern material and technology. In practicing intensive farming, living labor and material labor have a different composition in the total investment and they can be divided into two categories: labor intensive and capital intensive. Labor intensive indicates that laborers make up a greater proportion of the total investment on specific areas of land. Capital intensive indicates that the materials make up a greater proportion. With a long history of agricultural production, our country has accumulated traditional intensive farming experience. But because of backward agricultural science and technology, our agriculture is still mainly equipped with handmade tools, coupled with manpower and animal power. Our agricultural production technology mainly stemmed from accumulated and traditional experience while our intensive farming mainly depends on the intensive use of laborers. Therefore, our experience in intensive farming belongs to the labor intensive category. At present, our country has not reached the capital intensive stage while advanced technology and equipment are yet to be fully utilized. That is why the economic results of our intensive farming are not good enough while soil productivity and labor productivity are still comparatively low. Therefore, it is imperative to gradually replace backward production tools with modern farm machinery, to replace man and animal power with mechanical and electrical power and to replace traditional farming experiences with modern technology. The composition of organisms and the level of agricultural technology must be gradually raised so that our agriculture can develop from labor intensive to capital intensive. This is the main content of agricultural modernization. With such achievements, we will be able to carry out production and fight against nature consciously, and not blindly, to make use of and transform nature rationally, with economic results, and to produce increasing amounts of agricultural, forestry, animal husbandry, sideline and fisheries products to gradually improve the level of our agriculture.

III. In Carrying Out Intensive Farming We Must Strive To Achieve Economic Results and Handle the Relations Between Economy and Technology

As additional means of production are needed in carrying out and improving intensive farming, the total costs of production and per unit cultivated acreage will constantly increase. At the same time, the output per unit of acreage and the net income of agriculture, forestry, animal husbandry, sideline products and fisheries will also increase to bring about better and better results. But in practice, it often happens that because of irrational use of the means of production, huge investment may result in high costs, low efficiency, increased production but with the same income and even increased production with less income. Therefore, the following relations between technology and economy must be well handled:

First, in carrying out intensive farming we must handle well the relations among various technical measures so as to gradually set up an agricultural technological system that accords with objective laws. We must use modern technology and equipment to break away from the traditional relations of balance of the means of production and traditional agricultural technological system. Therefore, it is imperative to gradually set up new relations of balance of the means of production and a new agricultural technological system that accord with reality in various regions so as to achieve better economic results. Such measures are necessary because various technological measures are interrelated and affect one another. If we take only one technological measure and neglect the others, we will not be able to increase output and income. For example, in order to fully display the role of farm machinery, chemical fertilizer and pesticide and achieve good economic results, it is necessary to take corresponding technological measures and improve management. For example, in deep ploughing and leveling land, more fertilizer must be applied, otherwise, the yields could easily drop. The use of fine strains that give high yields must be followed by the application of fertilizer, water conservancy works and other technological measures; without these conditions, it would be more advantageous to use low grade strains with moderate output. The second team of the fifth branch of the friendship farm in Heilongjiang Province has displayed its superiority and attained great achievements after having completely realized mechanization. But the team is still in the early experimental stage and it has not been able to balance the relations between the means of production and the new agricultural technological system. As a result, its economic achievements are not very satisfactory. For example, when the farm was seriously hit by drought in 1978, the team failed to procure pumps and other mechanical equipment. As a result, the output of its 5,000 mu of wheat dropped. In 1979 when the team solved the problem of water conservancy, its per mu wheat output increased to 450 jin, 27.5 percent higher than the 330 jin average for the other branches. The team imported a tractor from the United States, coupled with three sowing machines instead of five as originally scheduled. As a result, the tractor can only draw pull three sowing machines at once, which is a waste of horsepower. In addition, the equipment used in drying and transferring crops into warehouses is incomplete, resulting in extensive use of supplementary manpower and lower labor productivity. In 1978 the team did not pay much attention to using good strains in sowing corn. As a result, the incidence of disease was comparatively high and growth was not uniform. The ears of corn were in different positions, serious lodging occurred, and the final harvest dropped by 10 percent. This shows that when various technical measures are taken, it is necessary, according to specific conditions in various regions, to make overall planning and arrangement and take all factors into consideration so as to establish a balanced relationship of the means of production and form a new agricultural technological system that is in line with objective laws and achieves better economic results from the various technological measures.

Second, more and proper investments must be made in carrying out intensive farming. Theoretically, with the development of agricultural science and technology, more investments and various technological measures will bring about endless economic results. But in the process of production and within the confines of a special technological level, increases in output and value are limited. Marx said: "The advantage of soil is that each successive investment will bring about benefit while the former investment continues to play its role. But these advantages are accompanied by the fact that the incomes from these investments differ from one another." (Marx: "Das Kapital" Vol 3, p 880) Therefore, we must study the amount to be invested. When the value of the successive investments equals the value of the increased output, the amount of the investment is at its maximum. Of course, in practice, the highest economic results and the proper amount of investment may also be sought through various planning strategems.

It is really significant to study the proper amount of investment. In this way, when we are making additional investment in certain areas of land, we will pay much attention, under certain technological conditions, as to how to add to the means of production and laborers economically and yet efficiently, how to rationally determine the direction of the investment, avoid working blindly, improve spontaneity and overcome the unscientific guiding ideology of "the bolder people are, the greater will be the increase in production." In this way, we will be able to make additional investments in accordance with reality with economic efficiency. At present, a number of regions and production units do not study the proper amount of additional investments. In addition, it is also because of higher prices of industrial products for agricultural use that the diversification of our agriculture is still low. This has resulted in increasing agricultural production costs and decreasing economic results. Statistics in Shandong Province show that total agricultural production costs in 1956 made up 27.4 percent of the total agricultural income; the figure for 1965 was 30.5 percent, followed by 37.3 percent for 1974, 43.3 percent for 1977 and 41.9 percent for 1978. According to investigation of some typical units, each yuan of investment achieved 3.65 yuan of profit in 1956, 3.28 yuan in 1965, 2.69 yuan in 1974, 2.32 yuan in 1977 and 2.38 yuan in 1978. In some units, irrational expenditure makes up about 15 percent of total expenses; such expenditure is more apparent in the waste of chemical fertilizer. So it is important to study the proper amount and economic efficiency of the investment. Such study will also help create conditions for improving agricultural technology to change the amount of the latter investment that is limited by the first investment. In this way, we will be able to make more investments with higher efficiency and constantly improve the level of intensive farming and agricultural production. Lenin said: "Theoretically, it is conceivable to invest any amount of capital on any acreage of land. Of course, it also depends on the existing economic, technological and cultural conditions; it depends on the conditions prevailing in the country at the time." (Collected Works of Lenin, "New Material on the Law of the Development of Capitalist Agriculture: Vol 22, pp 61-62) Therefore, it

is clear that the appropriateness of investment is decided by certain conditions and when we are able to change these conditions, we can then break away from this appropriateness to create a new one. Thus the appropriateness of investment will change according to the changing conditions.

Third, intensive farming must be carried out according to specific conditions in different regions and units. In such a vast country as ours, the material conditions and the development of agriculture differ in various regions. In addition, agricultural production concerns various living plants that grow according to their own laws. As different crops are grown in different regions with different soil and climate and different features and different crop structures, therefore intensive farming must also be carried out in different ways. Some regions must first of all concentrate their efforts on carrying out water conservancy projects, applying fertilizer and using fine strains while some other regions with rich resources, better water conservancy facilities and more fertilizer but with less population must broaden the aspects of production and concentrate their efforts on improving mechanization and electrification so as to improve productivity and develop agriculture in breadth and depth. In short, the principles governing intensive farming must be varied according to the time and place; they must in no way be "cut with one knife" or standardized.

Fourth, in carrying out intensive farming, we must proceed from reality, necessity and feasibility and undergo a process of development from a low level to a high level. We must bear in mind that our country has a huge population with limited land, a weak foundation and traditional intensive farming experience. But at the same time, we must strive to equip our agriculture with advanced facilities so as to improve the level of intensive farming. We must also continue to use and improve our traditional intensive farming experience. In carrying out intensive farming, we must rely on collective strength with help from the state, fully display the people's initiative in self-reliance and hard work, and overcome shortcomings and develop advantages so as to solve various problems. For example, we must make full use of our rich labor force resources, carry out agricultural capital construction and water conservation projects, develop forestry and accumulate green manure. In short, in carrying out and improving intensive farming, the composition of living labor and the means of production used per unit area of land can only be gradually changed, the ratio of living labor can only be decreased gradually and the transformation from labor intensive to capital intensive can only be realized gradually.

CSO: 4007

YAO STATEMENT ON SUMMER GRAIN OUTPUT TO FIFTH NPC CLARIFIED

[Editorial Report] Beijing RENMIN RIBAO in Chinese 31 August 1980, page 4, reported Yao Yilin's statement on the output of summer grain in his report on the National Economic Plan for 1980 as, "As for agricultural output, because of severe natural calamities in many areas, summer grain output is reduced by more than 10 percent." Beijing XINHUA in English 0918 GMT 30 August 1980 gave the statement as follows: "Natural calamities in many areas cut output of summer crops by over 10 percent."

CSO: 4007

RURAL ENERGY RESOURCES CONSERVATION DISCUSSED

Beijing GUANGMING RIBAO in Chinese 19 Jul 80 p 4

[Article by Wang Mengkui [3769 1125 1145]: "Pay Attention To Solving Rural Village Energy Problems"]

[Text] In considering energy problems during our country's construction of the four modernizations, there can be no looking at them solely from the standpoint of industry and the cities. It is also necessary to pay attention to solving rural energy problems. The 800 million farmers are the largest number of people lacking energy. Both in their daily lives and in production, the shortage of energy in rural villages is a serious problem. This grave situation has yet to arouse sufficient serious attention.

First of all there is the serious inadequacy of fuel in the daily lives of several hundred million farmers. In some places, fuel is lacking for 2 or 3 months or even longer out of a year. Of the more than 170 million households throughout the country, more than 70 million have a serious shortage of fuel. An overwhelming majority of farmers continue the backward practice of burning firewood directly. Departments concerned estimate that about 500 million tons of plant stalks are burned annually nationwide, and when this total amount is used as fuel, only the minimal needs of farmers for cooking fuel are met. In actual fact, about 40 percent of all plant stalks must be used as animal fodder and as industrial raw materials or construction materials, as or indispensable fertilizer (such as from cattle bedding). When fuel is inadequate, the farmers cut down trees (or even scrape off the bark and dig up the roots), cut grass (or even "cut the weeds and dig up the roots"). This produces a loss of plant cover, erosion, a weakening of the vitality of the soil, or even desertification. The ecological balance is destroyed, creating serious consequences. Unless this tendency is firmly reversed, we will bequeath infinite calamities and misfortunes to posterity.

In agricultural production, too, energy supplies are scarce. There are now 160 million horsepower of farm machinery throughout the country, for which only 8 million tons of diesel fuel are supplied in a year--an

average of about 50 kilograms per horsepower. This is the main reason why the utilization rate for farm machinery is currently low and utilization costs are high. At the present time, in the broad rural villages hand labor is used for the most part. Farm machinery use averages only 1 horsepower per 10 mu of land, which cannot be considered to make high demands on energy resources. But as the modernization of agriculture progresses, the consumption of energy in agricultural production must inevitably show a marked increase. Without adequate supplies of energy, agricultural modernization is difficult to imagine.

Agriculture is the foundation of the national economy, and modernization must have as its premise the growth of agriculture. In the preparation of national plans it is necessary to take into consideration the energy needs of rural villages, placing the problem of rural energy needs within the total energy development plan for the country, and plan to solve them as a whole. Of course, since the rural population is so vast, the present ability of the country's great electrical grids and large-scale coal, petroleum, and natural gas industries to supply energy to the broad rural villages must ultimately have a limit. Rural energy problems cannot rely entirely on the state for their solution. Therefore, except for petroleum (this the rural villages have no means of solving), and some coal and electric power (this is a problem that rural villages cannot entirely solve), which must be given across-the-board consideration in national planning, the broad mass of rural villages will have to adopt measures and adapt measures to local conditions to obtain a partial solution of their energy problems. On the basis of existing experience, they can at least undertake efforts such as those given below.

Development of methane gas. Between one-half and two-thirds of the solar energy stored in agricultural crops is in the leaves and stems. This is a termendous source of energy. When plant stems and firewood are burned directly, however, the thermal energy utilization rate is only 10 percent. Not only is a large amount of energy wasted, but a large amount of organic fertilizer is also destroyed. If the direct burning of the stems is changed to combustion to produce methane gas, many birds may be killed with a single stone. There will be numerous advantages. The first is that the thermal energy utilization rate will be increased several times over. It is estimated that about 300 million tons of plant stems from agricultural crops are burned annually in rural villages. This, plus accumulated animal dung and human feces, is capable of producing 100 billion cubic meters of methane gas, enough to supply the fuel requirements of rural villages throughout the country, with some to spare. Experience in some places has demonstrated that the methane gas produced by a 10-cubic-foot methane pit would be sufficient to supply one household of a commune member with his fuel needs for cooking and illumination, and the cost of construction of the pit would amount to only 40 or 50 yuan. A smaller one could be built for somewhat more than 10 yuan, which is affordable. Secondly, the thermal energy of methane gas can be converted into mechanical and electrical energy to solve part of the difficulties

occasioned by a shortage of petroleum for fuel and electric energy in rural villages. The mixing of methane gas with diesel oil to operate internal combustion engines could effect a 70-percent saving in diesel oil. Third, after crop stems and leaves have fermented and decomposed, they may be returned to the fields. Not only do they contain nitrogen, potash, and phosphorous--the plant nutrients--but they also contain an abundance of humus. Their fertility is much higher than if they had been directly returned to the fields or burned to ashes and returned to the fields. Fourth is the hermetic processing in the methane pit of contaminated water and human and animal dung, which helps improve environmental sanitation and prevent the transmittal of diseases. Use of methane gas has already advanced from the experimental stage into the stage of qualified use. In places where it is working well, problems of a shortage of firewood for burning have been largely ameliorated. Though some difficult technical problems still await further research (such as fermentation at moderate temperatures), and though the time has not yet come for full promotion, nevertheless, the future of methane gas is already certain beyond any doubt.

Construction of small hydroelectric stations. Our country has abundant water power resources. We stand first in the world in this regard, but only 5 percent of these resources that could be developed have been developed. Switzerland is a country in which waterpower resources have been put to full use, with a utilization rate of more than 98 percent. During a recent inspection trip in Switzerland, we saw that small electricpower stations had been built at Lake Geneva where the drop is not very high, and at the ends of bridges where the current flowed fairly fast. In some rural villages, small power stations had been built on narrow creeks to supply the needs of the several farmer families in the area. In our country, too, there is an abundance of small streams that could be used as waterpower sources to supply electricity, but their rate of utilization is only 4.2 percent. A vast potential remains. Small hydropower stations require small investments and get quick results. Construction on river tributaries and mountain streams and diversion ditches can all be handled using "self-construction, self-management, and self-use" methods, with adaptation of methods to local conditions, in order to satisfy the needs of rural villages for electric power in their funds, locals should give priority consideration to their energy problems and build, according to the local resources available, either small hydropower plants or small coal mines, provided they do not destroy major mineral resources. The energy situation has to be faced. Simply setting up shop to operate large and inappropriate things only intensifies the energy shortage.

Use of solar energy. Most regions of our country have a long period of sunlight. Two-thirds of the country get more than 2,000 hours of sunlight annually, so there are great prospects for the use of solar energy. Solar heaters may be used to heat water and cook food, and solar-powered dryers may be used to dry grain. Solar energy may be used to grow plants, to heat pens for the raising of hogs, and to electrify cattle pens. If a

farm family has a solar stove with 2.5 square meters of solar collection surface, the annual amount of heat collected will be equal to 600 kilograms of raw coal--enough to solve their fuel problems for cooking. At the present time, however, throughout our entire country there are only somewhat over 60,000 square meters of solar collecting areas for hot water devices operated by solar energy. This is really too little. Additionally, in some places, wind energy and geothermal energy hold possibilities for development.

Building of firewood forests. The farmers need firewood and construction materials, and they also like to beautify their environment. They very much want to grow trees for forests. The key is proper policies. Policies have to be made somewhat broader and somewhat more flexible, with the mountains, slopes, or deserts and beaches designated for the personal use of commune members to plant trees to the creation of forests which, like the "four side" groves (beside houses, beside villages, beside roads, beside the water), will be the personal property of commune members in perpetuity. The autonomy of production teams in operating forest industries must be respected, in keeping with the policy of what is created by the state belongs to the state, what is created by communes and brigades belongs to communes and brigades, and what is created by individuals belongs to individuals, so as to arouse the enthusiasm of the farmers to plant trees for the creation of forests. This will bring striking benefits in 3 to 5 years at a minimum or 7 to 8 years at most. When there are a lot of trees owned by individual commune members, this will be advantageous to the development of forests by the state and the collective.

A solution to the problem of rural energy requires the cooperation of industry. Industry exists to serve agriculture and to bring about the technical transformation of agriculture. It cannot simply manufacture tractors and chemical fertilizer, but it must conscientiously study the pressing needs of agricultural production and the farmers' livelihood, thereby determining the direction of its own production. Applied to a solution of the rural energy problem, this means that cement and pipes will be needed to produce methane; for the construction of small hydropower stations, small generators will be needed; for solar energy, solar collectors will be needed; and all of this will require the aid of industrial enterprises for a solution. Given the existing industrial base in our country, all that is needed is to set a proper course and diligently follow it; then it will not be difficult to gradually solve the problems.

To solve the rural energy problem, there must be both a broadening of sources of income and a reduction of expenditures. Right now the firewood-burning stoves and coal-burning stoves in some places could, Through scientivic improvements, be made to consume much less fuel. The main reason why many communes and brigades have increased output without increased income, or even increased output with decreased income, is the waste of energy resources in rural production. In the process of the modernization of

agriculture in our country, the manufacture of various farm machines and tools must seek to reduce energy waste. Needed reforms must be undertaken in traditional agricultural techniques, with consideration being given to energy savings. Unless this is done, the modernization of agriculture will encounter many difficulties. Furthermore, the consumption of energy by the majority of rural communes and brigades is currently very high, with much of their equipment being old and ailing "coal tigers," "oil tigers," or "electricity tigers" that consume a great deal. Of course, it would be very difficult for enterprises in communes and brigades to undertake large-scale replacement of equipment right now. But in terms of long-term development, the consumption of energy is a problem that simply has to be considered. One way is, when choosing the direction of development, to select products that consume little energy. Another way is to constantly replace equipment as technology advances. This is a problem of overall technological policy, and not one that is exclusive to rural commune and brigade enterprises.

In the course of human history there have been two major changes in energy. One was the change from grass and trees to coal, and the other was the change from coal to petroleum. The petroleum crisis has sounded an alarm for the people. Presently, industrially advanced countries spend very large sums of money to find ways both to conserve energy and to reduce the consumption of energy. They are actively researching renewable energy resources (plant energy, solar energy, wind energy, and ocean energy) and nuclear energy in an effort to make a third change in energy. This is a profoundly significant exploration. It may be said that unless this change is made promptly, the world economy and the entire civilization of modern man will face an unimaginable situation. In our modernizations we must take a long-term view, placing energy problems in an important position and giving them the earliest attention. The solution to rural energy problems must also be considered in this context.

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CSO: 4007

NEW AGRICULTURAL ENGINEERING COURSES NEEDED

Beijing GUANGMING RIBAO in Chinese 19 Jul 80 p 2

[Article by Sun Jun [1327 6874]: "Institutions of Higher Learning Should Quickly Establish New Specialties in Agricultural Engineering"]

[Text] Recently the Education committee of the Chinese Agricultural Engineering Society held a conference at Shenyang attended by specialists and teachers from 16 agricultural and industrial institutions of higher learning. They borrowed from foreign experiences with the realities of our own country in mind, proposing further development of special education in agricultural engineering.

The specialists felt that the modernization of agriculture actually has as its essential ingredients modern biological science, modern engineering science, and modern management science for the constant armament of agriculture to increase the process of development of agricultural productivity. Without the development of agricultural engineering science and technology, modernization of agriculture is impossible, and the development of agricultural engineering science and technology is dependent on the quantity and quality of specialists. Though our country has trained a large number of specialists in agricultural engineering during the past 30 years, we are still a long way from meeting the needs of the modernization of agriculture. Mostly, the variety of specialties is incomplete. The scope of learning provided by some specialized instruction in agricultural engineering is too narrow. Heavy industry is emphasized and agriculture is slighted. Some agricultural specialists rarely teach agricultural engineering. At the present time, agricultural engineering consists of civil engineering, mechanical engineering, structural engineering, energy engineering, from materials processing and handling engineering, systems engineering, etc., while in our country the special courses in agricultural engineering that institutions of higher learning have set up include only farm machinery design and manufacture, farm mechanization, water conservation for farmlands, hydraulic construction, and agricultural electrification. Other specialities--such as agricultural construction, agricultural energy, and soil utilization--are all gaps.

Everyone acknowledges that in order to meet the developmental needs of the modernization of agriculture, it is necessary to establish at once various new specialties in the field of agricultural engineering. Most of the agriculture and farm machinery institutes in our country presently have the rudiments of farm machinery and farm mechanization in their specialty curricula. Some institutions of higher learning have basic courses in farmland water conservancy and agricultural electrification. All that these schools need is more qualified teachers, equipment, and teaching materials to provide the conditions for the creation of new specialized courses in agricultural engineering.

In the course of discussions, everyone acknowledged that inasmuch as the basic situation in each school is different, there should be unified arrangements, with consideration for all concerned, when setting up new specialities. The long range and the short range should be combined, with the pressing needs of the present being paramount, but without any adherence to a single pattern. The specialists felt that the agricultural engineering specialties for which training is currently needed urgently are the following:

1. Agricultural construction and environmental engineers. Such graduates should be able to handle the various structures required for agricultural production in the growing of crops in areas under environmental protection, livestock factory farms, cold storage for farm and animal products, and cattle sheds and pens as well as environmental control installations, construction of rural houses, and planned project design, construction, and management for residential areas.

2. Rural energy engineering. Graduates should have a grasp of the basic principles of thermal energy and should be able to undertake the design, construction, and management, as well as techniques, for the conservation of petroleum and electricity, involving the development and use in rural villages of small hydroelectric stations, methane gas, thermal heat, solar energy, and windpower.

3. Land use engineering. Graduates should be able to handle planning for the rational use of land and the building of farmlands, and surveying, designing, and construction of projects for farmland water conservancy, soil improvement, and preservation of water and soil.

4. Agricultural engineering. Graduates should be able to handle overall planning for comprehensive projects in agriculture and cattle raising, the design and construction of models for project equipment, and comprehensive technological and economic analysis.

5. Agricultural materials processing and treatment or disposal engineering. Graduates should be able to handle the design, construction, and management of processing and treatment or disposal projects for agricultural and animal products, seeds, and agricultural waste.

The agricultural engineering specialists felt that the need for the above categories of personnel during the next 10 or 20 years would be no less than the number of personnel needed in agriculture, agricultural mechanization, and farmland water conservancy. They earnestly hoped that agriculture and farm machinery units and schools would make the fullest use of their individual advantages and conditions to take up the task of developing new specialties in agricultural engineering in order to meet the needs of modernization of our country's agriculture.

9432
CSO: 4007

WATER CONSERVANCY MINISTER INTERVIEWED ON FLOODING

OW191340 Beijing XINHUA in English 1313 GMT 19 Sep 80

[Text] Beijing, 19 September (XINHUA)--Despite heavy torrents this year, the main course of China's largest river, the Yangtze, has been safe, Qian Zhengying, minister of water conservancy, said in an interview with XINHUA. The level of the river has now fallen below the warning line, except in a few places.

She said the dykes protecting the Yangtze and its major lakes, including the Dongting, Boyang, Honghu and Chaohu lakes, had stood firm, but flooding caused by breaches of smaller dykes and accumulation of rain water on low-lying land following the heavy rains was quite serious. Mountain torrents also caused damage in some areas.

The minister estimated that in Hubei Province, which was the worst hit, 370,000 hectares of farmland were seriously affected. Other provinces along the middle and lower reaches of the Yangtze were also affected in varying degrees.

However, the important cities of Wuhan, Jiujiang, Wuhu, Nanjing and Shanghai, and vast plains along the river were protected, the minister said. Industrial production and rail traffic were not interrupted.

Describing the flood-prevention work carried out along the Yangtze, Minister Qian Zhengying said that in Hubei Province alone over one million people were alerted to guard the dykes along the main course and tributaries, and to drain off surplus water from low-lying land.

In Hunan Province, 700,000 people protected the dykes round the clock in shifts. When the Lishui tributary rose high, 160 kilometers of small dykes were quickly built on top of the main river dykes, thus safeguarding farmland.

Large numbers of people, helped by army units, were mobilized for flood prevention in other provinces and Shanghai municipality.

Weak dyke sections that showed signs of seepage were quickly repaired, the minister said.

She said that this year the Yangtze high water season set in earlier than usual and the high levels lasted longer. From early June to late August, 550 to 900 millimeters of rainfall were registered in most parts of the Yangtze basin, in places exceeding 1,000 millimeters. This was 50 to 70 per cent more than normal. August rainfall in the Shanghai area was three times that of normal and the heaviest in 107 years.

The minister said that on 2 September, the water level reached 27.76 meters at Wuhan, at the confluence of the Yangtze and its biggest tributary, the Han River. This was the third highest watermark since 1865, when records began to be kept.

CSO: 4020

FARMLAND SHORTAGE FEARED BECAUSE OF HOUSING CONSTRUCTION

Hebei Province

Beijing RENMIN RIBAO in Chinese 22 Jun 80 p 2

[Article by Feng Shouxian [7458 1343 0341] and Li Mingfu [2621 2494 4395], Luannan County, Hebei Province: "Build Houses Without Taking Away Too Much Farmland"]

> [Text] Editor's Note: A big population with limited land, and still less farmland, is a prominent contradiction facing us in modernization. We should cherish farmland as an important resource of our country. For a long period, this problem has not been solved very successfully. Should anarchy be allowed to go on in the control and use of the land, certainly it would make our limited farmland increasingly less available. The consequences would be too obvious to imagine. The leadership at all levels should grasp the economical use of land as a major issue. It is necessary to carry out unified planning and make rational arrangements. They should, according to the stipulations of relevant policies, enforce a strict procedure of examination and approval. In all cases of arbitrary seizure of land, no matter who you are, whatever should be put under control must be put under control, and whatever should be checked must be checked.

In recent years, the development of commune-run enterprises has been very fast everywhere, making it necessary to expand or build factory workshops and dormitories. With the continuous rise in the living standard of rural commune members, more and more individuals are building new houses. All these are good things. However, what deserves our attention is that more and more farmland has been seized by commune-run enterprises and commune members for house construction. According to statistics, in our [Luannan] County, during the 4 years from the latter half of 1975 to June of last year, the area of farmland was reduced by 28,500 mu, constituting 2.6 percent

of the total farmland area of our county. Of this amount, only 4,100 mu were used for the construction of water-conservancy projects, while the remaining more than 24,400 mu were used by various units (mostly commune-run enterprises) for capital construction and by commune members for building their houses. The seizure of land is not always justified in every case; the main problem is either in "applying for land liberally and using it sparingly" or in "seizing more land than what has been approved." For instance, according to the population and scope of rural communes in our county, it should be sufficient for a commune supply-marketing cooperative to occupy some dozen mu of land; however, some cooperatives have taken more than 20 mu. The commune tractor stations have generally only 6 or 7 tractors, for which 5 or 6 mu of land should be enough; however, some stations occupy 10 to 20 mu. A certain commune brick workshop has taken away more than 200 mu of farmland. When these units seized more farmland than necessary, some of them raised grain and vegetables on the land left over from capital construction. The commune members expressed great dissatisfaction with this, and relations between these units and the commune members became very strained.

As for the building of houses by rural commune members, some commune members with vacant land around their houses expanded their construction of new houses onto the farmland to get more space. Our provincial departments concerned have made a rule that in construting a house of three main rooms, a maximum space not exceeding 0.35 mu of land is allowed; however, most peasant households have built new houses by occupying 0.4 to 0.5 mu, or even 0.6 to 0.7 mu, of land. At present, most commune members build houses for a single family, but the foundation area for each house extends as much as 30 to 40 meters.

Our county party committee and county revolutionary committee have paid great attention to this problem. To solve the practical problem of too much farmland being taken away, they organized investigation groups and conducted a general inspection, with the cooperation of communes and production teams concerned, and requested that all land taken away unnecessarily should be returned and must be returned to the production teams. After this was done, all commune members were satisfied. A suggestion was then made to all places that an inspection should be conducted into the seizure of farmland by the commune-run enterprises and by commune members for building houses, in order to solve properly any case of seizing too much farmland or occupying farmland with permission.

Sichuan Province

Beijing RENMIN RIBAO in Chinese 22 Jun 80 p 2

[Article by Xiao Ning [2556 1380], Nanchong Municipality, Sichuan Province: "Leave More Farmland to Our Future Generations"]

[Text] Our Nanchong Municipality is situated on a flat embankment close to the banks of the Jialing River, with fertile soil and a rich source of

water. As irrigation is convenient, the output of agricultural crops is high. One mu of land can be used for more than 3 mu of hilly land. In the suburbs, the land is mostly used for growing vegetables for 200,000 people to consume. In the past 2 years, however, many units have built offices, factories, warehouses, hotels, and dormitories, and have occupied a great deal of suburban fertile land. A stretch of land once planted in vegetables now has tall buildings standing in the middle of the farmfields. The people ask: If thing go on like this, what can our future generations live on? Of course, only a few li away from the suburbs is low, hilly land where houses could have been built with good planning. Thus, not only the fine fields but also the production base for vegetables could have been preserved, so that there would be no shortage of vegetables for people in the city to eat. This is our appeal: control the land, preserve the fine fields and the fine soil, and leave more farmland for our future generations!

9039
CSO: 4007

BRIEFS

EARLY HARVEST, LATE CROPS--Under conditions in which the summer grain and early rice had a reduction in output because of disasters, our country's broad masses of rural cadres and commune members must try by every possible means to strengthen the late period management of the late autumn crop and work hard to have the autumn harvest make up for the summer harvest so that a good harvest is obtained this year. Because of the unusual weather this year, agricultural crops have remained green and ripened late; all areas in the north are now adopting every kind of measure to promote early ripening in order to avoid the dangers of an early frost. The double-cropped late rice in the south is now in the heading stage. This year the south had long periods of low temperatures and lots of rain during the summer which delayed the harvest of the early rice and made the transplanting period for the late rice later than last year. This year the amount of late rice which was transplanted after "autumn begins" [7 August] was 10 percent more than that in 1979 and the area transplanted to late rice was reduced by 5 million mu compated to 1979. Because of the late transplanting, the effective tillering and vegetative growth periods have been shortened with the results that the crop may encounter the cold dew wind which would reduce the output of late rice. Because of this, all areas must adopt countermeasures and strive for a good harvest of late rice. At present growing conditions for cotton in the northern cotton areas are good. In the southern cotton areas, because of long periods of rain, low temperatures and insufficient sunlight, the number of cotton bolls formed before and in June was reduced compared to 1979. While protecting the grain, all areas in the south must also strengthen their management of cotton fields. [Text] [Beijing RENMIN RIBAO in Chinese 19 Sep 80 p 1]

SPRING SILKWORM COCOONS--China reaped another bumper harvest of spring silkworm cocoons this year after achieving one last year. As of July 20, 2.15 million dan of spring cocoons had been procured by the State, an increase of 19 percent over the same period of last year and a record high since the founding of New China. This year all major silkworm cocoon producing areas registered substantial increases over last year. Sichuan scored a 27 percent increase, Zhejiang 13 percent, Jiangsu 29 percent,

Guangdong 11 percent and Shandong 8 percent. Many areas produced more than 100 jin of spring cocoons from each sheet of silkworm eggs. [Beijing RENMIN RIBAO in Chinese 13 Aug 80 p 2]

NITROGENOUS FERTILIZER STABILIZING AGENTS-- Since 1969, China has been conducting research on more than 30 stabilizing agents for nitrogenous fertilizers. It has now been affirmed that two agents, 2-chlor-6 (trichlormethyl) pyridine and guanyl thiourea, are outstanding low-toxic stabilizers that dissolve in the soil without creating any pollution problems. [Beijing RENMIN RIBAO in Chinese 13 Aug 80 p 2]

CSO: 4007

BRIEFS

ANHUI PREFECTURE FLOODED--From mid June to late August, Anqing prefecture in Anhui was hit by continuous heavy rains and rainstorms. As a result, 399 large and small dikes burst, and some 400,000 mu of farmland was flooded. On 30 August, the Anqing prefectural party committee called an enlarged meeting of its standing committee members to study necessary measures to cope with the situation. At present, some 300,000 people are working daily to combat flood and do whatever possible to insure the safety of the Changjiang River dike. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 6 Sep 80]

CSO: 4007

VICE MAYOR URGES CITY RESIDENTS TO PLANT TREES

OW191258 Beijing XINHUA in English 1227 GMT 19 Sep 80

[Text] Beijing, 19 September (XINHUA)--Ye Lin, vice-mayor of Beijing, today urged city residents to plant trees wherever possible so as to make Beijing into the clean and beautiful city called for earlier this year by the secretariat of the Central Committee of the Chinese Communist Party.

He was speaking at a meeting held to commend work units which have done best in planting trees and greenery. They include 62 factories, schools and neighbourhood community centers.

According to Beijing's municipal bureau of parks and gardens, city districts this year planted 690,000 trees and 640,000 square meters of plants and shrubs.

There has been a noticeable improvement on major streets and public places, especially Changan Boulevard, Qiansanmen Street parallel to Changan, and in the western city district.

Factories have also made great efforts to improve their environment. Beijing Electronic Tube Factory, for example, has planted 12,000 trees and 15,000 square meters of other plants in the last 2 years, and the capital iron and steel complex and the No 2 chemical works have also done well.

The Beixinqiao neighbourhood community center, in the northeastern part of the city, has planted trees in all the small lanes in its district, and 96 per cent of the local open spaces are covered with plants. Within the 2.25 square kilometers under its administration, there are 50,000 trees and a number of lawns and flower beds.

The vice-mayor called on all citizens to learn from these units and continue to use every bit of space to plant trees and flowers.

According to the municipal bureau of parks and gardens, the city's remaining 700 hectares of bare land will be planted with trees in 3 years, and not less than 25 per cent of the old part of the city and 30 per cent of newly-built areas will have grass and plants.

CSO: 4020

BRIEFS

BEIJING VEGETABLE PRICE HIKES--According to a report of "Shichang Bao" [Market News] published on 9 September, vegetable prices in Beijing for the first half of 1980 increased more than 30 percent as compared with the corresponding period in 1979. According to the city statistical bureau, the sales volume of vegetables in the first half of 1980 decreased by 32.53 million jin while total sales rose by 14.56 yuan as compared with the same period last year. In another words, the residents in the Chinese capital paid an additional 16 million yuan for vegetables. It should be recalled that last year the city leadership promised no vegetable price hike. However, this promise has not been kept and the masses are obviously discontented. [OW161317 Beijing Domestic Service in Mandarin 2230 GMT 9 Sep 80]

BEIJING RURAL WORK MEETING--The Beijing Municipal CCP Committee held a meeting on rural work on 28 August. The meeting said: It is necessary to eliminate the remnant poison of the ultraleftist line pushed by Lin Biao and the gang of four. We must redress all the peasants who have been wrongly criticized. One of the aims of this meeting was to bring the superior position into play and speed up production and enrich the rural areas as soon as possible. The meeting proposed: It is necessary to encourage and support domestic sideline production. Production teams must help peasants raise domestic animals and should not interfere with planting on the peasants' private plots. It is possible to divide deserted areas for peasants to cultivate in order to improve their standard of living. [HK170649 Beijing City Service in Mandarin 2300 GMT 31 Aug 80]

CSO: 4007

BRIEFS

GANSU GRAIN AND OIL PROCUREMENT--At the recent government-sponsored telephone conference on procurement of summer grain and oil-producing crops, Xu Feiqing, deputy provincial governor, called on governments at all levels to strengthen leadership over the procurement work of grain and oil-producing crops to mobilize cadres to whip up an upsurge in handing over grain and oil-producing crops to the state. He also called for efforts to keep sufficient good grain for commune members and seeds for cultivation and not to purchase grain excessively. [Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 22 Sep 80]

GANSU DESERT BOTANICAL GARDEN--Lanzhou, 19 Sep (XINHUA)--China's first desert botanical garden on the southeastern edge of the Badain Jaran Desert in Minqin county, Gansu Province, has increased its species of desert plants to more than 100 and its area to 70 hectares. Among the species are tamarisk, yellow flower sea-lavender and saxaul. Imported Algeria calligonums and cucurbita foetidissima thrive in this area hit by frequent sandstorms. China's deserts and sandy and gravel areas cover 1.2 million square kilometers, an area larger than its farmland. The garden, set up in 1974, has begun providing seeds and saplings to other counties and provinces to transform deserts. The plants have been grown in farming areas to intercept shifting sand and prevent the sand from being pushed southward by winds to encroach upon farmland. Many Chinese scientists have come to the garden for scientific research. [Beijing XINHUA in English 0717 GMT 19 Sep 80]

CSO: 4020

ENTERPRISES RUN BY PRODUCTION TEAMS ENCOURAGED

Guangzhou NANFANG RIBAO in Chinese 2 Jul 80 p 1

[Article: "A Cart Pulled by Three Horses Is Faster Than One Pulled by Two Horses"]

[Text] Editor's Note: 'Pulling with three horses is faster than pulling with two horses.' Industries managed by three levels of the commune will develop the collective economy faster than those managed by two levels. This should be very clear. During the 10 years of unrest, however, production teams were not allowed to operate enterprises. If they went ahead with it, they were accused of causing problems of direction and path. The Nanhai County Party Committee decided to get in touch with reality and thoroughly eradicate the residual poison of the extreme leftist line. A great effort was exerted to promote production team enterprises. This is an important measure to make the farmers rich as quickly as possible. The experience of that county is meaningful and should be generally extended.

When a production team does a good job of producing grain, it is proper for it to develop economic crops and animal husbandry according to the condition of the land. The practice of Nanhai County and many others demonstrates that production teams still have a great untapped potential. Aside from developing economic crops and animal husbandry, it is entirely possible for them to operate auxiliary industries, and some of them may also manage commerce. In that manner, the surplus labor of rural villages may be better organized to increase income so that the brigade may have more capital to support agricultural production, and the level of distribution of the members may be raised faster as well.

Of course, auxiliary industries cannot be operated by production teams blindly. The industries should be

suitable for the locality, enhancing its advantages and avoiding its shortcomings, in order to guarantee the greatest possible economic effect. But in the process of promoting production team auxiliary industries, the industries of the commune and the brigade should not be neglected, either. Industries at the three levels should have a division of labor so as to let each have its place, to benefit one another, and to promote one another. Since early this year, auxiliary industries operated by production teams of Nanhai County have developed very fast, while the enterprises of the communes and brigades of the county have also continued to develop. This fact proves that the system is entirely possible.

Correspondent Zou Canhua [6760 3503 5478] reports: Auxiliary industries operated by production teams in Nanhai County are flourishing like spring bamboo shoots after a rain. At present, more than 1,600 of the 3,070 production teams in the county are operating auxiliary industries. Some of these are operating commercial ventures as well.

Of those teams that operate industries, more than half are new at this enterprise and an additional 168 teams are planning to start. The industries operated by those teams include mainly light hardware, light chemicals, construction materials, braiding and weaving, transportation, processing of agricultural byproducts, food and beverage service, etc. There are more than 100 industrial products among them, and some are selling very well in domestic and foreign markets. From January to May this year, the total industrial income of communes and brigades of the county reached 94 million yuan, an increase of 29.4 percent over the same period last year. The many enterprises of the production teams add one more powerful force to the county's auxiliary industries.

The Nanhai County Party Committee had to undergo a learning period before the production teams were allowed to operate auxiliary industries. During the period of the "four pests," and for a period of time after the "gang of four" was smashed, the industries started by the production teams were all forcibly taken over by the brigade to implement the so-called "five unities," and the production teams were not allowed to operate auxiliary industries. Later, when "unity" did not seem to be enforceable, production teams were permitted to operate some scattered handicraft industries during the slack season at the farm. In the latter half of last year, the county party committee Production teams were positively encouraged to operate auxiliary industries to seek an overall development of agriculture, industry, and auxiliary industry in a form of comprehensive operation. Consequently, good results were obtained within a very short period of time. A good example is Xiaotang Commune. In 1978, the personal distribution of that commune ranked third in the county. Last year, it leaped to first place in the county, to 284 yuan, an increase of 75 yuan over that of 1978. The secret is an accelerated development of team-operated auxiliary industries. Last year the total income of auxiliary industries

operated by production teams of that commune (including money appropriated to the teams by the brigades) reached 9,250,000 yuan, an increase of 41.2 percent over 1978. This commune had the greatest range of increase in the entire county. Since the beginning of this year, the auxiliary industries operated by production teams in Xiaotang Commune have continued to grow. The Liansha Brigade of this commune has 15 production teams, not a single one of which had any auxiliary industry in the first half of last year. Now, all 15 production teams have started auxiliary industries, causing income to increase on a great scale. In the first 5 months of this year, the total industrial income of that brigade reached 1,080,000 yuan, an increase of 2.4-fold over the same period last year.

The leaders of the Nanhai County Party Committee look back at the process of developing auxiliary industries operated by production teams and comment with profound understanding that the more thoroughly the extreme left was criticized, the more liberated the thinking became and the faster the team-operated industries developed and the famers' level of wealth increased. The cadres and membership masses of the basic level of the rural villages also noticed from practice that operating auxiliary industries by the three levels of commune, brigade, and production team is favorable for the overall development of agriculture, industry, and auxiliary production. It is a road of comprehensive development of agriculture, industry, and commerce and is favorable for promoting rural villages to early and quick riches. They all said happily: "A cart pulled by three horses is faster than one pulled by two horses. There is hope that the farmers will be rich quickly."

6168
CSO: 4007

BRIEFS

AGRICULTURAL MANAGEMENT--Based on a resolution of the Guangzhou Municipal Party Committee concerning the conversion of the Municipal Bureau of Farm Management from an executive management organization to an enterprise-type general company, the Guangzhou Municipal Agricultural, Industrial, and Commercial Joint Company was established yesterday. This company and the Municipal Bureau of Agriculture are to operate under two signboards with one set of personnel to carry out enterprise management and system regulation. The Guangzhou Municipal Agricultural, Industrial, and Commercial Joint Company will have 2 companies and 10 farms under it, with a total of 27,500 state employees and 18,000 agricultural workers belonging to the collective ownership system. Its land totals 154,000 mu. Its total agricultural-industrial production last year totaled 74,360,000 yuan. Following the establishment of the joint company, its subordinate agricultural and animal farms and fruit orchards were organized into agricultural, industrial and commercial joint enterprises, as certified by the Municipal Party Committee late this month. These are the Jiufu Agricultural, Industrial, and Commercial Joint Company; the Minle Agricultural, Industrial, and Commercial Joint Company; the Yuanyi Agricultural, Industrial, and Commercial Joint Company; and the Municipal Agricultural, Industrial, and Commercial Joint Enterprise Supply and Sale Company. According to a related State Council regulation, the Guangzhou Municipal Agricultural, Industrial, and Commercial Joint Company has unified leadership over the persons, wealth, materials and supplies, and sales of its subordinate units. This gives greater production autonomy to its basic-level units, and makes the municipal farms the foundation of production of auxiliary foodstuffs in Guangzhou City. [Text] [Guangzhou NANFANG RIBAO in Chinese 29 Jun 80 p 1]

GUANGDONG AGRICULTURE MANAGEMENT--To further mobilize the peasants' activism in production, Guangdong Province has decided to readjust the classification management of agricultural and sideline products. The 47 categories of agricultural and sideline products have been simplified into 20 categories. After readjustment, the state monopoly for the purchasing and marketing of agricultural and sideline products will include grain, edible oil and oil-bearing crops. The second category products which are being changed to third category products include chicken, ducks, geese, fresh eggs, fresh pepper, lychees and medicinal herbs. [Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 7 Sep 80]

CSO: 4007

BRIEFS

GUIZHOU COUNTY AGRICULTURE--In 1979, Meitan county, Guizhou, reduced wheat acreage to 68,000 mu from 112,000 mu of 1978. Thanks to its proper management, per-mu wheat yield of that year was 40 jin more than the previous year. Rape acreage increased to 134,000 mu from 120,000 mu of 1978. This year, the county reaped a bumper harvest of rapeseed and procured more than 19 million jin of rapeseed, topping 1978 by more than 80 percent and more than doubling the previous record. Although this year the county has reduced grain output and resultant income by 2.25 million jin and 300,000 yuan respectively, it has increased rapeseed output and resultant income by more than 8 million jin and 4 million yuan respectively. As of now, Daozhen county has planted more than 60,000 mu of tong trees, totaling more than 2.4 million sticks. In 1979, the county's income from economic forests and diversified economy reached 19 million yuan, accounting for 55 percent of the total agricultural output value. [Beijing Xinhua Domestic Service in Chinese 3 Sep 80]

CSO: 4007

BRIEFS

HEBEI WHEAT PLANTING CONFERENCE--On the evening of 26 August, Hebei Provincial CCP Committee and people's government held a telephone conference to urgently mobilize the masses for combating drought and wheat planting. Governor Li Erzhong stressed the great political and economic significance of this task in stabilizing the situation in the province. He put forth the following specific demands: 1) Insist on collectivism and do not allow individuals to go their own way; 2) Have a detailed plan for cultivation areas for wheat, cotton, oil-bearing crop and other economic crops. When there is a conflict between wheat and cotton, cotton should be given priority; 3) Develop irrigation construction; 4) Sum up experiences to achieve high quality in wheat planting; 5) Institute and improve the system of responsibility for wheat production, particularly with regard to combating drought and planting wheat. This is to be flexibly implemented according to local conditions and after consultations with the people. In production teams where drought is serious and great difficulties are encountered, work teams taking specific responsibilities can be organized. CCP committees at all levels are urged to attach prime importance to this task. [Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 29 Aug 80]

CSO: 4007

BRIEFS

HEILONGJIANG SUGAR REFINERY--The Acheng Sugar Refinery in Heilongjiang Province began production 21 September, 5 days earlier than scheduled. Hou Jie, deputy governor of the province, inspected the refinery 22 September. The refinery is expecting to harvest more than 330,000 tons of beet crops this year, doubling last year's production. It will be able to process 1,500 tons of beets per day beginning 24 September. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 22 Sep 80]

HEILONGJIANG FARM MECHANIZATION CONFERENCE--The Heilongjiang provincial work conference on farm mechanization and reclamation sponsored by the Heilongjiang Provincial Party Committee and the Provincial People's Government convened 22 September in Harbin municipality. The main tasks of the conference are implementing the guidelines of the third session of the fifth NPC, receiving instructions by leading comrades of the state council to our province and directives on building marketable grain bases, summing up work experiences, discussing the 1981 farm mechanization and reclamation plan and setting forth a 5-year program. Wang Luming, deputy secretary of the Provincial Party Committee and deputy governor of the province, addressed the conference. He said: The state council decided to build our province into a national marketable grain base and expected us to achieve commune-level farm mechanization, reclaim 2.5 million mu of wastelands and hand over 5 billion jin of marketable grain to the state by 1985. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 22 Sep 80]

HEILONGJIANG MARSHLAND RECLAMATION--Beijing, 18 Sep--Experiments in using wells to drain or irrigate the marshland in Heilongjiang's Sanjiang Plain have been successful, thus laying a scientific foundation for building marketable bases in China's northeastern region. The plain is China's largest marsh area, covering some 30 million mu of wasteland. Since 1974 the Chinese Academy of Sciences' Changchun Geographical Institute and the concerned department in Heilongjiang have started to use this method in transforming marshland. In case of waterlogging, the excessive water can be drained into the wells; in case of drought, well water can be used for irrigation purposes. [Beijing Xinhua Domestic Service in Chinese 0131 GMT 18 Sep 80]

HEILONGJIANG COUNTY WHEAT OUTPUT--Keshan county, Heilongjiang Province, reports a 10 percent increase in average unit yield this year from its 1 million mu wheat fields. The county had 810,000 mu of wheat in 1979 when there was also a 10 percent unit yield increase over the previous year. The continuous growth in wheat production owes to the expansion of farm mechanization which is now the basic farming method for 57 production brigades. [Beijing Domestic Service in Mandarin 0400 GMT 7 Sep 80]

CSO: 4007

BRIEFS

HENAN MARKETABLE FISH--Zhengzhou, 19 Sep (XINHUA)--The State Aquatic Products Bureau has decided to build fishery freshwater bases in municipalities and counties of Henan Province along the Huanghe River. In the past 2 years, pilot bases have been built on the outskirts of Zhengzhou, Kaifeng and Luoyang municipalities and in Lingbao, Zhongmou, Kaifeng and Minquan counties, comprising a total of more than 700 fish ponds and more than 7,000 mu of water area. [Beijing Xinhua Domestic Service in Chinese 0149 GMT 19 Sep 80]

TORNADO IN HENAN--The Henan Provincial CCP Committee and Provincial Government sent a comfort group to Gushi county after a tornado swept through 66 production teams on 24 August. The tornado caused serious losses both in lives and property. On 28 August the comfort group headed by vice chairman of the Provincial Civil Affairs Bureau (Xiao Zhang) and vice chairman of the Provincial Agriculture Committee (Feng Mingao) arrived in Gushi county from Zhengzhou. [Zhengzhou Henan Provincial Service in Mandarin 1130 GMT 10 Sep 80]

HENAN COUNTY COTTON ACREAGE--The 115,000 mu cotton in Xinxiang county, Henan Province, is growing better than last year's crop. Field management is stepped up as the crop reaches its late stage of growth. [Beijing Domestic Service in Mandarin 0400 GMT 7 Sep 80]

CSO: 4007

BRIEFS

INJECTIONS FOR CONTROLLING INSECTS--Park workers in Beijing have successfully controlled two varieties of insects that are harmful to willow trees and Chinese Scholartrees in some areas of Beijing by injecting oxidized demethoate into pre-drilled holes in the trunks of these trees. In one case, when two Chinese scholartrees were treated by this method, thousands of dead insects were found on the ground around the trees the following morning, and two days later, all harmful insects on these two trees were exterminated. [Beijing RENMIN RIBAO in Chinese 9 Aug 80 p 2]

CSO: 4007

BRIEFS

HUNAN LAKE FLOOD--Recently, due to continuous rain in the upper reaches of Changjiang, the water level of Dongting Lake rose again. In some areas, the water levels have reached a dangerous level. Some 400,000 mu farmland near the lake areas are waterlogged. The Hunan Provincial CCP Committee, the Provincial Peoples Government and the affected prefectures and counties have regarded resisting floods as their primary task. While resisting floods, the leadership in the affected areas have also paid attention to grasping the current production and doing a good job of autumn sowing and tending late rice. At present, the threat of flooding still exists in the Dongting Lake areas. [Changsha Hunan Provincial Service in Mandarin 2315 GMT 4 Sep 80]

CSO: 4007

BRIEFS

JIANGSU AFFORESTATION WORK--Nanjing, 15 Sep (XINHUA)--Jiangsu Province has scored marked achievements in afforesting its plains in the past few years. As of now, the province has afforested 20 million mu of land on its plains. The aggregate timber reserve of trees planted near villages, along roads and streams and by houses has reached 10.98 million cubic meters or 75 percent of the province's total timber reserve. [OW180647 Beijing Xinhua Domestic Service in Chinese 0256 GMT 15 Sep 80]

JIANGSU SORGHUM--This year Sihong county, Jiangsu Province, has planted 100,000 mu of sorghum, a cereal used in making a Chinese wine. A local winery has already signed contracts with various communes for the purchase of this cereal. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 2 Sep 80]

COMMUNE INDUSTRIAL PRODUCTION INCREASED--The total value of goods produced by industries run by communes and production teams in Jiangsu for the first half of 1980 rose 53.4 percent compared with that of the same period of 1079. This amounted to 20 percent of the value of goods turned out by all the industries in the province. [Nanjing XINHUA RIBAO in Chinese 24 Jul 80 p 1]

NEW INSECTICIDES--Jiangsu has achieved good results in its research and production of high-efficiency, low-toxic insecticides under the joint efforts of local research units, institutes of higher learning and industries. As of now, 25 varieties of such insecticides, including biothion and phoziom, have been trial-produced, and 17 of them are being manufactured. Nearly half of the chemical insecticides produced in Jiangsu is of the high-efficiency, low-toxic varieties. [Nanjing XINHUA RIBAO in Chinese 15 Jul 80 p 1]

CHEMICAL FERTILIZER FOR AUTUMN CROPS--Over 380,000 tons of nitrogenous fertilizer for the autumn-ripened crops were delivered to production teams in Jiangsu during the first 20 days of July. Moreover, some 600,000 additional tons are stored in warehouses, ready for future use. [Nanjing XINHUA RIBAO in Chinese 26 Jul 80 p 1]

CSO: 4007

BRIEFS

JIANGXI RURAL ENTERPRISES--The Jiangxi Provincial People's Government held a telephone conference on the production of the commune- and brigade-run enterprises on 2 September. The conference called on cadres and workers of these enterprises to strive to fulfill this year's production plan and prepare conditions for a big boost in production next year. Wang Zhaorong, member of the standing committee of the Provincial CCP Committee and vice provincial governor, presided over and addressed the conference. It was disclosed at the conference that during the first 6 months of this year, the total output value of rural enterprises reached 583.4 million yuan, topping the same period last year by 9.6 percent. But the development was uneven. The conference adopted major measures for insuring the fulfillment and overfulfillment of the production plan. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 6 Sep 80]

CSC: 4007

BRIEFS

JILIN BEET HARVEST--According to statistics, the province's total output of sugar beet is expected to be more than 800,000 tons this year, an increase of 28 percent over that of the former best annual harvest. To enable the people to increase their income by the bumper beet harvest, Jilin Province recently held a work conference to study and work out measures on harvesting and delivering sugar beet as well as its storage. The conference noted: Our province still follows the old way to assign beet storage tasks to production teams, purchase stations and sugar refineries. However, production teams will be paid for their storage according to how well, how much and how long they store the beet. Every production team may draw in advance 70 percent of the payment it is to receive for storage. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 18 Sep 80]

JILIN FIRE PREVENTION CIRCULAR--The Jilin Provincial People's Government recently issued a circular on fire prevention. It states: During the autumn harvest, we must pay special attention to fire prevention since the weather is dry and electric appliances are in use everywhere. We should draw lessons from the Bohai No 2 oil rig incident and do a good job in safety so as to ensure that this year's bumper harvest results in increased income. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 17 Sep 80]

JILIN MUNICIPAL MINOR HARVEST--According to statistics compiled by commercial departments, by 10 September, Jilin municipality in Jilin Province had procured 2.89 million yuan's worth of products of minor autumn harvest, amounting to 38.6 percent of its annual procurement plan. [Changchun Jilin Provincial Service in Mandarin 2200 GMT 20 Sep 80]

CSO: 4007

SHENYANG HOUSEHOLD GIVEN ASSISTANCE IN RAISING PIGS

Beijing RENMIN RIBAO in Chinese 27 Jun 80 p 1

[Report by XINHUA correspondent Liu Ce [0491 4595] and XINHUA reporter Liu Xin [0491 2946]: "Pig-Raising Household Su Yulan's Great Contribution"]

[Text] In Liaoning Province, the Xinchengzi Ward of Shenyang Municipality granted a loan of 6,000 yuan to female commune member Su Yulan, who has a special skill in pig raising, and helped her run a family pig farm with 10 pigsties, a feed-fermenting pool, and a motor-pumped well. This family pig farm now has 9 sows, over 10 piglets, and more than 30 big porkers. In addition, there are also 4 milch goats, 16 head of cattle, and 2 donkeys. Up to the end of May, she had sold to the state five big porkers, each weighing over 290 jin.

Su Yulan [5685 3768 5695] is a member of the No 6 production team of the Liuwang Brigade in the Xinchengzi Commune. She has received a secondary vocational education, shown keen interest in study and, with assistance from her husband, learned a set of scientific methods for raising pigs. The piglets sometimes weigh more than 250 jin 8 months after birth. Last year, she kept 50 pigs and sold 23 big porkers to the state, each weighing an average 253 jin. She was elected a good hand at pig raising.

To give full play to her skill, at the beginning of this year the Liuwang Brigade, where she was living, designated her home as an individual household specialized in pig raising, and asked her daughter, a middle-school graduate, to stay at home and help her mother keep pigs. To help Su Yulan solve the problem of greenfeed for the pigs, the production team assigned a feed plot of 3 mu to her home. Su Yulan signed a contract with her production team with the stipulation that this year her family would keep 100 pigs, sell 40 big porkers to the state with a gross weight of 10,000 jin, deliver 200 cubic meters of fine-quality manure to the production team, and pay the production team the accumulation of an average worker and the net income from the 3-mu plot. The leadership departments of Xinchengzi Ward also gave their positive support to Su Yulan in running her family pig farm well, granted her an interest-free loan of 6,000 yuan (to be repaid fully in 3 years) and, at the same time, even helped her acquire bricks, tile, cement, and timber to build the pigsties.

From the initial experience, it may be seen that the active development of such individual households specializing in animal husbandry is characterized by its limited investment and quick results, and that it is favorable to the state, to the collective, and to the individual. According to the contract, this year she will sell 40 big porkers to the state, approaching the total number sold by the entire production team last year. She will deliver to the production team 200 cubic meters of pig manure, about one-eighth the total amount of the whole team's pig manure.

The Xinchengzi Ward's practice of granting a loan in support of a commune member to become an individual household specializing in animal husbandry has been supported by the Liaoning Provincial Party Committee and the Shenyang Municipal Party Committee.

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BRIEFS

LIAONING AUTUMN JOBS--Since mid-September, Liaoning Province has been engaged in three autumn tasks--harvesting, plowing and sowing. According to incomplete statistics, the province has harvested 1.78 million mu of various crops, sown winter wheat on 6,995 mu of farmland and plowed 20,000 mu of farmland. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 20 Sep 80]

LIAONING FORESTRY POLICY--The Liaoning Provincial CCP Committee and the Provincial People's Government issued a circular 28 August on readjusting the policy on forestry for eastern mountain areas. The circular noted that the state grain purchasing quotas should be reduced in hilly areas in the eastern mountain areas, and the state should purchase the timber produced by communes, brigades and collectives there at negotiated prices beginning in 1981. The circular also set forth regulations and demands in this regard: 1) Planting trees and building forests in the eastern hilly areas is encouraged so as to conserve water and soil. 2) State farms should guarantee the implementation of the state unified timber distribution plans and timber purchasing measures. 3) It is necessary to enliven the management of timber and wood products. 4) It is imperative to mobilize the masses to develop comprehensive utilization of timber. 5) CCP committees and people's governments at all levels should strengthen administration and supervision in forestry work to protect forest resources. [Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 16 Sep 80]

CSO: 4007

BRIEFS

BREAD PRICES HIGH, QUALITY LOW--Recent letters from the masses have revealed that bread prices in Hohhot municipality continue to climb, but the quality of the bread continues to decline. Low-cost bread, costing 7 or 8 fen, has disappeared from the markets. Bread priced at 1 jiao is not always available. People usually can only find bread costing 1.6, 1.7, 1.8 or 2 jiao. Why is bread so expensive in Hohhot municipality? The main reason is high profits. Bread sold at and above 1.6 jiao can create gross profits ranging from 33 to 38 percent. For example, Hohhot's municipal bakery sold 760 tons of bread last year, earning 15,300 yuan in net profits. Its retail departments earned 13,800 yuan. In the first 8 months of 1980, the bakery sold 1,300 tons of bread, earning 26,800 yuan in net profits. Its retail departments earned 36,400 yuan. Other bread production and sales departments report similar profits. It is hoped that departments concerned address this issue and stop increasing commodity prices. [Excerpts] [SK220352 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 21 Sep 80]

NEI MONGGOL LIVESTOCK BREEDING--Hohhot, 10 Sep--Despite serious natural disasters, Nei Monggol has scored good gains in livestock breeding. As of the end of June, the total number of animals topped last year's record by 15.5 percent. The effect of this year's serious natural disasters will probably be seen in next year's production. [Beijing Xinhua Domestic Service in Chinese 0817 GMT 10 Sep 80]

NEI MONGGOL ANIMAL SALE--Xilin Gol League, Nei Monggol, recently held an enlarged standing committee meeting of its CCP committee. The meeting decided to sell 2.07 million head of livestock, 28 percent of the total number, either to commune members or to industrial and mining enterprises in order to ease forage grass shortage caused by serious drought. Young and weak animals and horses are to be sold and female animals, stud animals and cattle are to be protected. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 17 Sep 80]

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BRIEFS

COMMUNE INDUSTRIAL PRODUCTION--The Value of goods produced by commune-run industries in Shandong during the first half of 1980 registered a record 22.6 percent increase over the comparable period of 1979. The increase in individual products was much higher than the above figure. For example, the output value of timber, paper and flour mills and ceramic factories was up by 37.2-150 percent. Production of these industries in June showed a 55 percent increase over last January, and that of the second quarter was 67 percent higher than that of the first quarter. Moreover, product quality and profit also rose, while raw material and fuel consumption dropped. [Jinan DAZHONG RIBAO in Chinese 16 Jul 80 p 1]

MORE SMALL TRACTORS PRODUCED--By combining the efforts of county-run and commune-run industries, Rongcheng County of Shandong produced 3,430 twelve-hp tractors in 1979, a 7-fold increase over 1974, the year prior to the combined efforts. During the first 7 months of this year, 2,630 such tractors were manufactured, an increase of more than 40 percent over the same period of last year. [Jinan DAZHONG RIBAO in Chinese 15 Aug 80 p 1]

SILKWORM COCOONS--Shandong reaped a record harvest of spring silkworm cocoons this year. By the first 10 days of July, 91,000 dan of cocoons had been procured by the State, an 8-percent increase over the same period of last year. [Jinan DAZHONG RIBAO in Chinese 17 Jul 80 p 1]

PROCUREMENT OF SUMMER GRAIN--By July 23, Changwei Prefecture of Shandong had turned over or sold to the State more than 560 million jin of wheat, overfulfilling its state quota for the procurement of summer grain. [Jinan DAZHONG RIBAO in Chinese 27 Jul 80 p 1]

FARMLAND CONSTRUCTION--Yantai Prefecture of Shandong plans to build during this coming winter and next spring 600,000 mu of farmland that is assured of a good harvest irrespective of drought or flood. Its plan for farmland construction this coming winter calls for the mobilization of nearly one million persons (30-40 percent of the total labor force) and an investment of about 90 million yuan, 80 percent of which will be provided by local communes and production brigades. [Jinan DAZHONG RIBAO in Chinese 24 Jul 80 p 1]

CIRCULAR ON WHEAT SOWING--The Provincial Government of Shandong recently issued a directive calling on all areas in the province to do a good job in wheat sowing this autumn by summing up past experience, making adequate preparations for the timely sowing of a sufficient quantity of wheat crop and by strengthening leadership. Wheat is a major grain crop in Shandong, and wheat output makes up nearly 40 percent of the total grain output in the province. [Jinan DAZONG RIBAO in Chinese 5 Aug 80 p 1]

SHANDONG AGRICULTURAL ZONING CONFERENCE--The Shandong Provincial People's Government recently held the second provincial work conference on agricultural resources surveys and agricultural area zonings. In light of the demands of the central authorities and the realities of the province, the participants set forth two targets: Completing the county-level soil surveys before 1983 and the county-level zonings of agricultural areas before 1985. They held that the violation of natural and economic laws has been the greatest obstacle to the development of agricultural production. [SK170131 Jinan Shandong Provincial Service in Mandarin 2300 GMT 15 Sep 80]

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BRIEFS

SHANGHAI AIRCRAFT IN AGRICULTURE--Shanghai, 17 Sep (XINHUA)--Airplanes seeded rice and trees, applied fertilizer, weed killer and insecticides and created artificial rain on a total of 4 million hectares in East China from January to August this year. In addition, planes conducted aerial prospecting. Air-seeding of trees has been used on 51,000 hectares since spring this year, 9.5 times as much as in 1979. The planes, which flew a total of 4,560 hours, were sent by the Shanghai regional administration under the general administration of Civil Aviation of China. [OW181425 Beijing XINHUA in English 0738 GMT 17 Sep 80]

CSO: 4007

BRIEFS

EARLY RICE HARVEST--The average per-mu yield from 810,000 mu of early rice in Yichang Prefecture, Sichuan, this year exceeded 600 jin, an increase of 10 percent over last year's. [Chengdu SICHUAN RIBAO in Chinese 1 Aug 80 p 1]

SUMMER GRAIN PRODUCTION--By July 15, Sichuan had overfulfilled its summer grain taxation and purchase quotas. Many communes and production brigades are still selling their surplus grain to the State. Despite this year's smaller summer grain acreage, and even though some counties were hit by natural calamities during last winter and spring, this year's total summer grain output in Sichuan still can reach or approach to that of last year, in which the highest annual grain output was registered. [Chengdu SICHUAN RIBAO in Chinese 24 Jul 80 p 1]

OUTPUT OF PLA FARMS--State farms run by PLA units stationed in Sichuan have completed their summer harvests. Their grain and edible oil output rose 13.4 percent over that of the same period of last year. [Chengdu SICHUAN RIBAO in Chinese 7 Aug 80 p 1]

CAMELLIA FORESTS--Fuling Prefecture of Sichuan planted more than 410,000 mu of new camillia (Thea Oleosa) forests in the past 4 years. This prefecture now has more than 660,000 mu of such forests, twice as much as in 1956, a year in which this prefecture had the largest camellia acreage in history. [Chengdu SICHUAN RIBAO in Chinese 5 Aug 80 p 2]

PEASANTS' INCOME INCREASED--According to a survey conducted by the Statistics Bureau of Sichuan on the finances of 1,724 commune-member families in 36 counties, the average per-capita cash income for the first half of this year was 42.3 yuan, an increase of 18.5 percent over the comparable period of last year. The survey also showed the sale of all major consumer goods rose during the same period. The estimated per-capita annual income for this year is 30-40 yuan higher than that of last year. [Chengdu SICHUAN RIBAO in Chinese 30 Aug 80 p 2]

SICHUAN AUTUMN FARMING--Chengdu, 13 Sep (XINHUA)--Cadres and commune members in Sichuan Province are overcoming difficulties caused by low temperatures and rains and are striving to do a good job in autumn harvesting, field management and planting. By now, Yibin, Jiangjin, Wanxian, Fuling and Leshan prefectures have harvested 50 to 70 percent of their intermediate rice crop. Various localities are planting such crops as potato, sweet potato, corn, buckwheat, vegetable and green manure and are carefully tending the cotton crop. In view of the abnormal weather conditions since the beginning of autumn this year, the Sichuan Provincial Government has issued an urgent circular calling on the rural areas to do their best in autumn harvesting, field management and planting. [OW181415 Beijing Xinhua Domestic Service in Chinese 0704 GMT 13 Sep 80]

SICHUAN UNDERGROUND WATER--Chengdu, 16 Sep (XINHUA)--Abundant underground water resources were recently found by a hydrological team of the PLA capital construction engineering corps in the northwestern grasslands of Sichuan Province. The grasslands stretch across Hongyuan, Aba, Zamtang and Sertar counties in northwestern Sichuan and cover a total area of 160 million mu of land. Irrigation water is now available from wells sunk in this area. [Beijing Xinhua Domestic Service in Chinese 0128 GMT 16 Sep 80]

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BRIEFS

XIZANG HANDCRAFT DEVELOPMENT--Lhasa, 11 Sep (XINHUA)--The Xizang Autonomous Region People's Government recently appropriated a special fund, totaling 4.2 million yuan, to help develop collectively owned minority nationality handicraft enterprises. [Beijing Xinhua Domestic Service in Chinese 0120 GMT 11 Sep 80]

CSO: 4007

SPECIALIZED LABOR IN COMMUNES DISCUSSED

Hangzhou ZHEJIANG RIBAO in Chinese 24 Jun 80 p 2

[Article by Zhong Borong [6988 0130 2837], of Agricultural Office of Ningbo Prefecture]

[Text] In the countryside, following the development of agricultural sideline industries, in many communes and brigades a number of specialized teams (farms and factories), specialized groups and households, and specialized personnel, who are assigned work according to what [products] they are engaged in producing, have already appeared. This is a new change that has appeared in the organization of labor on people's communes in the countryside. It is advantageous for the scientific division of labor among the labor force, brings into play the effect of all kinds of human talent, raises the production-technique level and managerial level of personnel of all specialties, and is certain to further promote the overall development of the agricultural economy. As seen in the situation in Ningpo Prefecture at present, in general there are the following three types of specialized organization and division of labor:

Specialized Teams, Farms, and Factories

Generally, within the scope of operations of a commune or production brigade, according to what is being produced (mainly [sideline] industries, special forest products, the fishing industry, and animal husbandry), a specialized division of labor is carried out and specialized teams, factories and farms are set up; within each industry the division of labor is also according to the various items being produced and the different types of work. For example, in the fishing industry, there are production brigades for open-sea fishing, offshore fishing and fish raising,; in forestry there are mountain forests, mao bamboo, tea leaves, sericulture and fruit production [brigades]. In animal husbandry areas in some communes and brigades, a specialized division of labor is also used in raising pigs, cattle, rabbits, sheep and goats. The more varied the items produced by the communes' and brigades' industrial enterprises, the more refined the division of labor. Due to the fact that at present the main production by both communes and

brigades engaged in is industry and sideline industry with a highly varied production, following the continuous strengthening of the economies of these two levels [commune and brigade], specialized personnel and a specialized organization of labor are certain to be more and more [in evidence.] However, since at the commune and brigade levels most of the labor force comes from the production teams, this then necessitates the correct handling of the relationship with the production teams, the basic accounting unit. The communes and brigades should allocate appropriate funds to a production team on the basis of the amount of labor it has provided. During the busy agricultural seasons one must carry out the necessary coordination of production, and the production teams must then enable the specialized personnel to enjoy the same treatment as the other commune members. These questions are best discussed through consultation by the commune and the brigades with the production teams, and set down in the form of a contract, to the "four satisfactions" of commune, brigade, production team and commune member.

Specialized Groups Within the Production Team

There are generally three kinds of situation for specialized organizations in the production team: One, in mountain areas, semi-mountainous areas and areas used for the production of economic crops, where there is comparatively little arable land and where comparatively many items are produced, a small number of production teams have set up specialized groups according to what is produced. For example, No 4 Production Team of Xixia Brigade, Tangyun Commune in Fenghua County has 77 households having [a total of] only 84 mu of arable land. They divided the entire team's labor force into the four specialized groups, i.e., mountain forest [products], special products (tea leaves, sericulture), industry and sideline industries and grain; [these groupings are] fixed for the year, and work is coordinated among them. Two, in areas on the plain that produce mainly grain and cotton, a portion of the production teams have set up small specialized groups for a definite portion of the work force involved in the production of small-scale economic crops, sideline industries, and animal husbandry. Three, in the production of field crops, during busy agricultural seasons specialized operation groups are set up temporarily according to the various kinds of work. There are also some production teams where, on management sections of rice or cotton fields, aside from the work of applying manure, controlling pests and irrigation, the management of farm work in the fields is portioned out among specialized management groups of from three to five persons. Since at present the scope of the production teams is definitely not large, they generally have from 20 to 30 percent of the labor force engaged in the commune's, the brigade's and outside areas' industry and sideline industries production. For this reason, the development of a varied line of production for production teams is objectively under a definite limitation, and many production teams have actually become specialized contingents for the production of grain and cotton. In this circumstance, the production teams, in making arrangements for their labor force, should proceed from reality and not further subdivide

into small and complete operation groups. In the setting up year-round, seasonal or temporary specialized operation groups, labor should be divided scientifically according to what is being produced, the type of work, and the commune members' special capabilities. For every production item for which a specialized division of labor can be put into effect, the possibilities should be exhausted for setting up year-round, definite specialized groups, or temporary specialized operation groups. Comparatively large-scale production teams can set up year-round operation groups with a fixed basis in the fields, but they should not further subdivide small-scale economic crops, mountain forest products, special products or sideline industries for operation groups to manage.

Specialized Households and Specialized Personnel

Specialized houeholds and specialized personnel are mainly engaged in the rather technical production areas, favoring a dispersed management, such as apiculture, animal husbandry and small-scale economic crops as well as such occupations as offshore fishing, handicrafts and agricultural machines. Practice clearly demonstrates that for certain items of production adopting the method of assigning work to specialized households and specialized personnel is advantageous for bringing into full play the enthusiasm of those commune members possessing definite specialized, technical capabilities, increasing the collective's and the commune members' income, enlivening the market, and satisfying the daily necessities of people in the city and countryside. For this reason, we should allow their existence and development. The labor force, however, must be arranged by the collective in a unified way; we must determine reasonably the labor compensation to specialized households and specialized personnel, and also set up the necessary systems of production responsibility, according to the various items being produced, adopting methods such as the "several fixes, one reward," or profit from a definite amount to be turned in to the government and giving over a job and recording the amount of work done.

Regardless of what type of specialized labor organization or specialized assignment of labor is adopted, judging from the present situation we must concentrate on solving the following several questions: the specialized organization and division of labor must definitely be based on the commune members' special technical capabilities, to the extent that a person should be able to use his talent to the utmost; once a specialized labor organization is set up, it should be relatively stable; since we want to do a good job of the specialized division of labor, we must also concentrate on doing a good job of coordination; we must set up strict systems of production responsibility and personal responsibility; we must strengthen our technical guidance and training, and continuously raise the specialized personnel's technical level.

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DEDUCTION SHOULD BE MADE FOR FIXED PROPERTY DEPRECIATION

Advantages of System

Hangzhou ZHEJIANG RIBAO in Chinese 14 Jul 80 p 2

[Text] Carrying out an overall evaluation and putting in order the fixed property on the people's communes in terms of basic accounting units and putting a depreciation system into effect are important measures for strengthening economic accounting, consolidating and strengthening the economy of the collectives, and hastening the development of agricultural production.

We know that fixed property on people's communes in the countryside gradually suffers wear and tear and is used up, even to the point that it is scrapped altogether. Wornout and discarded fixed property has to be replaced, and therefore one should calculate a sum to be deducted to compensate for this depreciation. The proportion of the total earnings for a given year so deducted would then be the depreciation charge. Once the depreciation charge is deducted, the funds needed for the replacement of the fixed property will be guaranteed; otherwise, the original capital would be used up. However, there is no deduction for depreciation on the greater part of the fixed property of the communes and brigades in our province, and wornout fixed property does not have any regular source [of funds] for being replaced, and so the accumulation fund, production fund, or some other special fund must be tapped. Because of this, though to all appearances the accumulation fund of a good many communes and brigades is not small, in actuality a very great portion of it is used merely to make up for the depreciation of fixed property, while the amount that really serves as an accumulation fund and is used for expanding reproduction is actually not very large. The people's communes ought to put into effect everywhere a depreciation system for fixed property, in order to make good the value of the depreciation of fixed property caused each year by actual wear, to allow replacement of fixed property to have a regular source of funds, to enable the accumulation funds to be used exclusively for expanding reproduction, to guarantee the continuation of reproduction, to avoid blindness in the use of the accumulation funds that are deducted, and thus to hasten the consolidation and strengthening of the collectives' economy.

Some people might ask why, since an accumulation fund has already been collected, one should also collect a depreciation charge? The main reason for this sort of question is the failure to understand the meaning of depreciation, and the lack of a clear idea of the distinction, both in theory and in practice, between accumulation fund and depreciation charge. Some people have misgivings that once a charge for depreciation is deducted, it will reduce the commune members' income. Actually, not collecting a depreciation charge means failing to account for a portion of production costs, thereby falsely enlarging net income. If a depreciation charge is collected, one can accurately compute production costs and thereby accurately compute the amount of income that should be allotted to the commune members. In other words, in the case of some communes and brigades where in a certain year production decreases owing to some natural catastrophe, or where there have been very bad economic conditions, if deducting a depreciation charge is going to influence the commune members' allotted incomes, then according to the policy one could appropriately reduce the amount of the accumulation fund retained, using this to carry out an adjustment.

Putting into effect a depreciation system for fixed property is still a new job for our province. The area that it relates to is very broad, it is very much in line with our policies, and the amount of work required to implement it is great. Because of this, we must strengthen our leadership, strengthen our ideological education, arrange [the implementation of the system] in a concrete way, and make it into a great matter to be grasped for the reorganization and improvement of management and administration. In the course of doing a good job of getting pilot projects started, we must, on the basis of summarizing our experience, proceed in a well-directed and systematic way from specific cases to a general [application of the policy], apportioning periods of time and areas in which to launch the policy. We must make the process of carrying out an evaluation of fixed property and setting up a depreciation system into a process of arousing the masses to run their people's communes democratically, industriously and thriftily. At the same time that we do a good job of putting in order and setting up a depreciation system for fixed property, we should set up a system for the care and use of fixed property and raise the management and administration of the people's communes to a higher level.

One Collective's Experience

Hangzhou ZHEJIANG RIBAO in Chinese 14 Jul 80 p 2

[Investigative Report by Huang Sheng [7806 3932]: "Collective's Family Property Increased; Commune Members' Income Raised"]

[Text] The Fellowship Brigade in the town of Haimen, Huangyen County has over a long period of time held steadfastly to [a system of] depreciation for fixed property and has strengthened economic accounting, guaranteed

the continued replacement of fixed property, and caused the collective's family property to increase, the commune members' income to rise, and the collective's economy to become more and more prosperous all the time.

This brigade's putting into effect of [a system of] depreciation for fixed property was begun in 1964. At that time, the brigade's party branch discovered that the loss due to wear of the brigade's and all the production teams' fixed property was very great, and a very large portion of the common accumulation fund that was collected was used for the maintenance and replacement of farm machinery and tools, etc., and could not be used for expanding reproduction. In order to solve this problem. they discussed the matter with the cadres and commune members, and decided on a method of consulting each enterprise singly and putting into effect a system of depreciation for fixed property. The Fellowship Brigade has been implementing a system of depreciation on fixed property for 17 years, and the advantages reported by the cadres and commune members have been very many:

It guarantees that the quantity of fixed property will increase as production progresses; the common accumulation fund increases, and it is advantageous for the consolidation and strengthening of the collective's economy. In the past, a depreciation charge for fixed property was not collected, and after a tool was worn out, if one wanted to go on working it was necessary to use [money from the] accumulation fund to have it replaced. As a result, the amount of fixed property increased slowly, and the common accumulation fund could not really be used for expanding reproduction. After the implementation of a depreciation system for fixed property, if a tool was worn out, although the original object was scrapped, nevertheless a depreciation charge had already been collected, and so the value of it still existed. In this way, it guaranteed that the amount of fixed property could only increase and not decrease, and it also guaranteed that the accumulation fund would be used for the purchase of new property. Over the past 17 years, the entire brigade has collected a total of 615,000 yuan in fixed property depreciation charges, causing the total value of fixed property to reach 812,000 yuan; the accumulation fund collected amounted to 850,000 yuan. At present, this brigade has more than 80 agricultural sideline machines of all kinds.

It speeds up the repair of agricultural machinery and equipment and the adoption of new technology, raises the effectiveness of labor, and promotes the overall development of production. After a depreciation charge was collected, there was a reliable source for the funds needed for the replacement and repair of agricultural machinery and equipment, and this then enabled the brigade and the production teams to have comparatively more collective funds for the purchase of more and newer agricultural machinery and tools urgently needed for the development of production and for sideline industries. Furthermore, labor efficientcy was greatly increased, and so they could use the labor force that had been saved to develop many new areas of production. In 1979, in the entire brigade there were more than 400 persons engaged in sideline industries, comprising 66 percent of

the entire work force, and the income from sideline industries amounted to 86 percent of the total income. Last year, the average income allotted to the commune members was 282 yuan.

It is possible to represent the cost and expenses of production accurately, and this is advantageous for strengthening economic accounting and lowering costs. In the past, because a depreciation charge was not collected, the wear and tear and using up of fixed property were not calculated into the cost and expenses of production, so that it was not possible to represent the cost of [producing the various] products accurately, or to carry out an accounting analysis of costs. After [a system of] depreciation for fixed property was put into effect, wear and tear on fixed property would constitute part of the production cost for a given year. If the fixed property were not managed well or not used properly, the amount of wear would be even greater, with the result that the depreciation charge would be even greater; the cost of production would be higher, and the commune members' allotment would be smaller. In this way, a direct connection was made between the quality of the care and use of fixed property and the commune members' economic advantage, and this proves very effective for urging the commune members to take care of collective property and carry through the guiding principle of managing their communes industriously and thriftily. For example, in 1976 on the No 4 production team, owing to the poor management of the feeding of the farm cattle, one cow was stolen and another died of disease--a loss of 900 yuan, calculated into the cost over a 2-year period. This taught the commune members a good lesson. Afterward, they strengthened management, and not only were the farm cattle well taken care of, but the members were very conscientious about the management of other property as well, and they greatly economized on production costs.

It is advantageous for a reasonable arrangement of the relationship between the accumulation fund and consumption, and for promoting the implementation of the allotment policy. Before a system for depreciation of fixed property was put into effect, in mapping out the "Know 1 Year in Advance" plan and in drawing up the yearend earnings allotment plan, the commune members were frequently not clear about how to assess the value of wear on fixed property, and so there was a definite blindness in their deduction of the accumulation fund. If they were to take more, then the commune members would get ideas [be suspicious]; if they were to take less, there would also be the fear that there would not be enough, adversely affecting the development of production. After the implementation of a system of depreciation for fixed property, the accumulation fund was used exclusively for expanding reproduction and for the addition of new fixed property, deducting as much each year as needed; this [system] then was somewhat easier to manage. The arrangement of the accumulation fund vs. expenses could then be made more reasonable and consistent with reality.

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BRIEFS

MILK COW BASE--For the purpose of developing the milk products industry, the Hangzhou Food Products Factory adopted the method of linking the factory up with the farm, set up a milk cow base area, enabling its factory to get a good hold on its principal motive of developing production, and also increased the income of commune, brigade and commune members. The cooperative relationship between the Hangzhou Food Products factory and the Hangzhou Sijiqing Commune was established the earliest, and has been very effective in supporting the commune's development of the production of milk cows. Over the past one or two years the food products factory has successively established cooperative relationships with the Jianqiao, Hongwei, Dongfeng and other communes' dairy farms, and in October of last year also signed a contract with Zhuantang Commune, altogether setting up seven diary farms. After these milk cows base areas were set up, the factory helped them bring in bulls and frequently sent experts to carry out technical guidance, thus promoting a continuous rise in the dairy farms' managerial and technical level. The reason for the establishment of the milk cow base was to provide an adequate supply of milk for the factory. In 1979 all the base area dairy farms together supplied to this factory 4.36 million jin of fresh milk, a 36 percent increase over 1978. Following the increase of the milk source, the milk products also correspondingly increased. In 1979 altogether 261 tons of milk powder were produced, a 51 percent increase over 1978. By the end of May, 152 tons of milk powder have already been manufactures, a 19.23 percent increase over the same period last year. At the same time, the income of commune, brigades and commune members increased; in 1979 the income of all the milk cow bases from fresh milk alone amounted to 813,600 yuan. [Text] [Hangzhou ZHEJIZNG RIBAO in Chinese 23 Jun 80 p 2] 9684

AGRICULTURAL BANK SUPPORTS RURAL AREAS--The Zhejiang provincial branch of the Agricultural Bank of China has made great efforts to support communes and brigades in the countryside in developing the production of commercial products. So far this year, throughout the province they have granted agricultural loans [totaling] over 620 million yuan, an increase of 61 percent over the same period last year. In order to enable the funds to be better used to economic advantage, this year agricultural banks at all

levels throughout the province and over 3000 credit cooperatives have already separately selected 7000 model production teams, and are helping them to bring their own superior features into full play, and progress with the major item of commercial products production. Most recently, the provincial branch bank allocated the sum of 45 million yuan in agricultural loans, selecting the best and supporting the model teams in developing commercial products production. The first agricultural loan of 15.8 million yuan was granted to 21 counties including Tonglu, Xiangshan and Pingyang. These funds, apart from being used for developing traditional products such as silkworms, tea leaves, tangerines and oranges, will also support Tonglu's apiculture, Fuyang's handmade paper, Pingyang's straw weaving, Xianju's day lilies, Yunhe's black tree ear [fungus], as well as cold storehouse's for aquatic products in the fishing areas along the coast. Regarding the eleven barren mountain counties, this time a loan of 7.65 million yuan was granted, comprising 48.4 percent of the total sum of the first grant. [Text] [Hangzhou ZHEZIANG RIBAO in Chinese 25 Jun 80 p 1] 9634

ZHEJIANG COUNTY RICE HARVEST--This year Suichang county, Zhejiang, has reaped a bumper harvest of early and middle-season rice. As of 20 August, 284 production teams of the county had fulfilled annual grain procurement plans and had sold 580,000 jin of grain at higher prices. [Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 3 Sep 80]

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TITLE: "Studies on Peanut Rust in Guangdong Province"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 67-74

TEXT OF ENGLISH ABSTRACT: Peanut rust (Puccinia arachidis Speg.) was first found in Guangdong in 1956, and has become epiphytotic since 1970, causing 25-59 percent in yield losses.

The rust fungi infect leaflets, petioles, stipules, pegs and hulls, producing typical pustules. Only uredospores have been observed. The optimum temperature ror uredospore germination is 24.5-28°C; the thermal death point is 50°C. The incubation period is 6-8 days at 24.5-26.5°C, and longer at 21°C and 29°C.

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 67-74]

Uredospores on leaflets, kept at 21-25°C, retained germinability and infectibility for 120-150 days. Intensive sunlight inhibits spore germination.

Penetration mostly takes place through the stomatal opening of the leaflets, but may also happen through the intercellular space of the epidermis. The amount of rainfall and retention of dew period play an important role in the disease development, as the temperature is favorable for the rust fungi during the growing season. Volunteer rusted plants, infected crop debris, diseased hulls are the primary sources of inoculum, the first source mentioned being the most important.

About 1000 cultivars of peanuts have been screened for resistance; none is highly resistant, but the varieties tested differed greatly in susceptibility.

Early planting in the spring, late planting in the autumn, using resistant varieties, spraying at 8-10 day intervals three to four times during the period of disease onset, may significantly reduce the incidence of the disease and increase yields. Daconil is the most efficient fungicide of all the chemicals tested.

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TITLE: "On the Control of Head Smut of Corn"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 75-82

TEXT OF ENGLISH ABSTRACT: The head smut (Sphacelotheca reiliana (Kuhn) Clint.) of corn is one of the most important diseases in the Baicheng region of Jilin Province. The percentage of smut plants is usually about 3-5 percent, and sometimes over 30 percent. The symptoms in addition to the ordinary stunting, rosetto and polystooling were observed. The smut balls occur mostly on ears and somethimes on both ears and tassels.

Chlamydospores collected from natural dissemination showed a high percentage of germination, but those collected from the inner part of the sorus were low in germination. Although it might be carried on seedcoat, soil transmission is considered to be the main mode of dissemination since the chlamydospores maintained their vitality in soils for three years. Higher infections might be

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 75-82]

obtained from the contaminated soil.

Infections in the seedling stage occurred abundantly until the four-leaf stage, and actually decreased from the start of the five-leaf stage. No infection took place at the leaf stage.

Head smut fungus from corn did not infect sorghum. On the other hand, corn plants were infected by sorghum head smut at a low rate. The chlamydospores thus produced from corn plants lost the ability to infect sorghum, but infected corn at an increasing rate. This might be due to the different physiological races in the smut inoculum. The head smut fungi collected from Shanxi and Xinjiang were weak in pathogenicity while that from Liaoning and Jilin are strong.

More than 200 inbred lines and hybrids have been tested for their resistance to head smut in field plots. The highly resistant varieties were almost immune. The resistance of maternal plants had more important influence on next generations.

Over 100 fungicides were tested for seed treatment, with a few of them showing 70 percent controlling effects but were not stable in different years. Most fungicides showed only 50 percent controlling effects.

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TITLE: "On the Integrated Control of Rice Dwarf Disease in the Second Crop of Rice"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 83-88

TEXT OF ENGLISH ABSTRACT: The rice dwarf disease of the second crop of rice transmitted by leaf-hoppers was to be reduced over 80 percent by the following measures: adopting resistant (or tolerant) rice cultivars, improving cultural practices, growing the rice cultivars of about the same growth duration in the adjacent stretches of fields and applying insecticide one to three times at the initial stage of plant growth in transplanted fields. Without adopting agricultural measures and merely applying insecticides one to three times for the

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 83-88]

second crop of rice, less than 59 percent of control resulted. In small areas of rice fields, only two to four applications during the peak stage of insect vectors migration resulted in better than 80 percent control. If it is expected to control the incidence of dwarf disease in the second crop of rice down to 1 percent, 3 percent and 5 percent, the number of leaf-hoppers per plant used as criterion for insecticide application was 4, 12 and 20 respectively when the viruliferous rate of vectors was 2.5 percent. When the viruliferous rate of vectors was 5 percent, the number of leaf-hoppers per plant used as criterion for insecticide application was 2, 6 and 10 respectively.

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TITLE: "A Preliminary Study on the Vitality of Gibberelia zeae (Schw.) Petch. in a Rice Field in Shanghai"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 89-92

TEXT OF ENGLISH ABSTRACT: In accordance with the actual condition of a wheat-early rice-late rice system in Shanghai, three experiments on the vitality of Gibberella zeae were carried out in soil pots with an imitation of the paddy field conditions in the open during 1974-1978.

The results of spore germination experiments obtained in 1974 and 1975 indicated that both macro-conidia and ascospores with their substrata, although immersed in the water layer of the soil pots, could maintain their vitality up to 18-20 days.

Results of transplanting the early- and late-rice seedlings into the inoculated water layer of the soil pots throughout the rice growing season showed that the scab fungus could neither oversummer nor overwinter in such a water layer of

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 89-92]

soil pots. Furthermore, no viable hibernating mycelia were detected from the overwintered rice stubbles from the above pots.

During the years 1974-1978, observations made on the source of the primary infection revealed that the perithecia were only produced on the overwintered rice stubbles which were collected from the field after the sowing of wheat, but not on any other rice stubbles which were collected from the same field before the sowing of wheat. It is considered that the primary source of infection of the scab disease was chiefly the diseased wheat seeds.

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TITLE: "Studies on the Orientation Establishment Behavior and Feeding Reaction of the Newly Hatched Larvae of the Yellow Stem Borer to the Rice Plant and to Oryzonone"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 93-100

TEXT OF ENGLISH ABSTRACT: These studies were carried out in 1961-1964 in Nanjing, Jiangsu Province. The results are summarized as follows:
1. On the rice plant during the tillering-prebooting stages, the newly-hatched larvae of Tryporvza incertulas (Walker) always leave the leaf portion, then crawl downward on the leaf sheath and bore into the plant. Such orientation behavior is not determined by positive geotropism.
2. The feeding site of the newly-hatched larvae seems to depend upon the

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 93-100]

developmental stage and the variety of rice plant. For instance, on the tillering stage plant, the distance between the bore and the basal part of the plant is less than 10 cm; on the prebooting stage plant it is 10-20 cm; after the booting stage it is more than 30 cm.
3. The feeding behavior of the newly-hatched larva in response to the various stages of rice plants was found to coincide with the oviposite selection of the adults. In the different stages of the rice plant, the leaf sheath of the tillering and booting stages was found to be preferred by the first instar larva to that of the prebooting and grain-filling stages.
4. An attractant substance for the newly-hatched larva was found to exist in the leaf sheath and in the booting stage of the rice plant, whereas in the leaf tissue, an anti-feeding substance may possible exist.
5. The order of establishment quantity of the newly-hatched larva on the rice plant is: seedling of 17 days > seedling of 44 days; for the survival of the first instar larva the order is: old seedling > young seedling.
6. The compound "oryzonone" synthesized by the authors was found to be attractive to the newly-hatched larva in certain concentrations.

The cause for change of the orientation site and establishment quantity of the newly-hatched larva is also discussed.

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TITLE: "Studies on the Sampling Method of the Nymphal Stage of the Oriental Migratory Locust (Locusta migratoria manilensis)"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 101-112

TEXT OF ENGLISH ABSTRACT: Since the end of the 50's, the sampling method for estimating the population density of the nymphal stage in locust outbreak areas has been simple random sampling with sampling units of 3.3 m^2. As a result of combined measure of reconstruction and chemical control of more than 10 years, the population density of this pest has been markedly decreased. In such a low density condition, from an economic point of view, which sampling method is suitable for the nymphal stage should be ascertained.

In this paper, several comparisons among three sampling methods (i.e., simple random sampling, stratified sampling for proportion and stratified sampling for optimum allocation) and three types of sampling units (i.e., 3.3 m^2,

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 101-112]

16.5 m^2, 33 m^2), are made with respect to sample sizes, sample cost and relative precision, etc.

According to these results, a suitable sampling method is proposed, which is stratified sampling for optimum allocation with 33 m^2 of sampling unit. The relative precision for this sampling is 2.2 times higher than that of the sampling method usually used and the relative time cost is 2 times less.

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TITLE: "Studies on the Mass Rearing of Corn Borers. I. Development of a Satisfactory Artificial Diet for Larval Growth"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 113-122

TEXT OF ENGLISH ABSTRACT: The development of a satisfactory semi-artificial diet (oligidic) from 1962 to 1978 for mass-rearing of corn borers (Ostrinias Spp.) is reported. New Diet No 7 contains mainly soybean meal (15 g), corn meal (19 g), Brewer's yeast (9 g), glucose with vitamin mixtures (7.5 g) and ascorbic acid (0.5 g) as its nutritive ingredients, together with water (120 cc) and agar (2 g) to form a solid medium for the borer. Soybean meal used in this experiment was a mixture of coarse and fine particles, autoclaved at 15 lb for 30 min before use. Corn meal, which was also a mixture of different sized particles, was treated in an oven with a temperature of 110-120°C

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 113-122]

for about 100 min. Sorbic acid (0.5 g) and formalin (0.2 cc) were used as antibiotic agents. The former was added directly into the boiling agar solution and dispersed evenly in the medium as crystals after cooling in order to avoid any undesirable effect of the organic solvent. Although Bottger reported that no enzymes capable of hydrolyzing starch were found in the digestive tracts of corn borer larvae, the authors found that incorporation of corn meal into the diet did increase pupal weight to a significant extent. After inoculation of egg masses on the diet, the larvae developed from newly-hatched to fully grown in about 21 days under conditions of 28-30°C and 70-90% RH. The average weight of female pupae was around 105 mg, the average rate of emergence was 34.4%, and the average egg production per female was 10 masses. The results obtained were comparable to or somewhat better than those reported by L. L. Lewis and R. E. Lynch in rearing European corn borers on a wheat germ diet. The improved technique reported in this paper was successfully used in the research on host plant resistance, sex attractants and a sterile male technique. Experiments showed that females of a 17th generation exhibited a strong attraction to the wild males under field conditions and males emerging from pupae irradiated with a semi-sterilizing dose competed comparably with wild males under both laboratory and field caged conditions.

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TITLE: "Studies on the Selective Toxicity of the Pesticide Mixtures"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 80 pp 123-132

TEXT OF ENGLISH ABSTRACT: The acute oral toxicity of the mixtures of dimethoate or malathion with EBP or IBP was determined in mice. The toxicity of dimethoate was enhanced 2.4 and 4.5 times respectively by IBP and EBP, and the toxicity of malathion was increased 5.5 times by EBP.

The enzymatic hydrolysis of dimethoate, N-methylcaproamide and α-naphthyl-acetate by mouse liver homogenates was strongly inhibited after oral treatment of mice with EBP or IBP. Almost complete inhibition of the carboxyamidase and the carboxylesterase occurred sooner after a single oral dose of EBP (121 mg/kg) or IBP (343 mg/kg).

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 80 pp 123-132]

The hydrolysis of dimethoate and N-methylcaproamide by the amidase of sheep liver microsomes in vitro was strongly inhibited by EBP, IBP, triphenylphosphate (TPP), tri-ortho-tolylphosphate (TOCP), EPN, omethoate and carbaryl respectively. These inhibitors had lower I_{50} values in the range of 1.3×10^{-8} to 4.0×10^{-5} M. Tests showed that EBP, IBP, TPP and carbaryl were competitive inhibitors for both the carboxyamidase and the carboxylesterase of sheep liver microsomes. Inhibition constants (K_i) for these inhibitors ranged from 4.8×10^{-8} to 1.0×10^{-7} M. These results indicated that the synergistic mechanism for the above pesticide mixtures was attributed mainly to EBP or IBP, which inhibited the detoxification normally occurring by the hydrolysis of the carboxylamide linkage of dimethoate or the carboxylester linkage of malathion catalyzed by the carboxyamidase or the carboxylesterase.

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II. PUBLICATIONS

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I. GENERAL INFORMATION

RESISTANCE APPEARS IN CHINA TO RETURN TO FAMILY-RUN FARMS

Paris LE MONDE in French 6 Sep 80 p 4

[Article by our correspondent Alain Jacob: "Resistance Appears To Return to Certain Forms of Family Farming"]

[Text] (Beijing)- Just as the Chinese deputies are informed of vast plans of economic reform, surprisingly different opinions are expressed on the desirable ways to conduct rural policy. At the heart of the debate is the question whether the organization of people's communes, divided into brigades and teams, must be maintained at least in its main lines, or whether a return of less "socialized" and more "private" forms of cultivation is preferable.

The discussions, begun nearly 2 years ago, took on a rather lively twist in the spring of 1979 with letters in the press denouncing either the dismantling of collective farming, or persistent "leftwing" tendencies--that is anti-reform ones--among rural officials.

In October 1979, two documents issued by the Central Committee were supposed to clear things up. They indicated, in short, that it was permitted to divide production teams into "work groups," but on the condition that the team retains control over bookkeeping and wages of the peasants, and thus remains the "basic unit" of the rural system. The texts made it clear that, excepting very special cases (particularly in mountainous and scarcely populated regions), it was not permitted on the one hand to distribute land to individual farmers, and on the other, to set up units answerable for their profit and loss on the basis of a family group.

Obviously, these texts represented only a compromise at the time, and evolution over almost a year has largely transgressed these limitations. A formula that has gained increasing acceptance consists in giving family groups "responsibility for a production," for rice transplanting for example, thus relegating the team to a mere formal role. Around that system all kinds of variations can shape up, concerning especially land distribution, utilization of draft animals, farm tools, mechanized equipment, or irrigation pumps, etc. But the trend is clear: a return of methods extolled in the early sixties by Liu Shaoqi in the wake of deceptions arising from hasty and systematic generalization of people's communes.

Well, this orientation is formally contested in several provinces. The most glaring disapproval was formulated in July by Wang Enmao, Jilin party first secretary, who condemned the allotment of "production quotas" to family groups, adding that progress can only be achieved in the interest of productivity and well being of all through "consolidation and development of collective economy," and not by allowing "everyone to work for himself."

Wang Enmao is not the only official to have issued that kind of warning. On 10 August, Li Erzhong, provincial governor of Hebei, recalled that it is out of the question for anyone to "affect the collective ownership of means of production," and condemned "certain production teams for distributing farm land, animals, and equipment to open or disguised individual farms." He added, "It goes without saying that while criticizing the leftist line we must keep out of rightist phenomena as well."

Similar warnings have appeared in Guizhou, Hubei, etc. This kind of reaction was prompted in part by technical reasons. Fragmentation of production units has given rise to unbearable difficulties in the use of equipment--rare after all--which could not be divided. There were even cases in which, amid a drought, irrigation systems could not be fed by collective electric pumps. In a more general way, there is the understanding that modernization of agriculture is hardly compatible with a return of traditional farming structures. Less than 100 km from Beijing, it is usual to see harrows or ploughs drawn by women--a sign of fundamental poverty that rules out mechanization, unless through collectivization. But, independently of the questions that can be asked on the amelioration of living conditions of peasants of both sexes, such mechanization is indispensable if one wants to considerably increase seasonal agricultural output; otherwise deep ploughing and rational use of chemical fertilizer can hardly be possible. Not to speak of the weight of traditions which, in small family units, often resist the introduction of techniques as elementary as periodical crop rotation.

Political Debate

There are reasons to think, however, that the debate is political as well. First of all, because the central press continues to criticize leftist wrongdoings with much more severity than it does rightist errors. On 27 August, the QUOTIDIEN DU PEUPLE even carried a short article, showing how much "foot dragging" a brigade in Jilin, precisely Wang Enmao's province, has been able to cause with its refusal to toe the family farming line. Inversely, it is known that the Jilin party first secretary--a former military man--is not in disagreement with present trends now calling the shots in Beijing on the only problem of rural farming. Going against the grain of what has been said for the past two years elsewhere, he affirmed in July that it was necessary to continue sending educated youths to work in the rural areas, since, he said, "one of the goals of communism is to bridge city-country side gaps." These statements are inspired by the best authors, but not by those who are now publicly listened to in Chinese leading circles.

Such discrepancies caused one to mull over the solidity of the present orientations and the resistance facing them. In many places, for instance in the south of Hubei, local officials have been incapable of telling the people whether farming systems accepted this year would still be tolerated next year.

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CSO: 4200

PRC ECONOMIC JOURNAL ON POLICY IMPROVES AGRICULTURAL PRODUCTION

HK020705 Beijing JINGJI GUANLI in Chinese No 8 15 Aug 80 pp 3-5

[Article by Zhou Chuan [0719 1557]: "Judging the Power of Policies From the Increase of our Agricultural Production"]

[Text] The year 1979 was the first year of China's policy of the readjustment, restructuring, consolidation and improvement of the national economy. Since then, we have made remarkable achievements in agriculture. Their manifestations are mainly the following: first, production increase by a large margin. The agricultural gross output value including farming, forestry, animal husbandry, sideline production and fishery registered an increase of 8.6 percent in 1979 above the 1978 increase of 8.9 percent. The annual average growth of grain production in the past 2 years was more than 40 billion jin, a rise of over 8 percent. Such a large and successive increase in agricultural production has been unparalleled since the founding of new China. Second, the standard of living of the peasants is greatly improved. With the development of agricultural production, the average annual per capita of grain which the peasants gained from collective production rose to 7 percent and that of income increased to over 13 percent. The system of more pay for more work has brought about a better life and ease of mind to millions upon millions of peasants. In the vast countryside, there is a booming scene hardly seen in the past years.

Why has the pace of agricultural production been so fast and the changes in the rural areas so remarkable in the past 2 years? People said, "It is the result of the fine policies which won the hearts of the masses." Facts confirm this. Various localities earnestly carried out the two documents of the party Central Committee on developing agricultural production, implemented the related policies accurately and thus was able to demonstrate the tremendous strength of party policies by accelerating the expansion of agricultural production.

Stabilize Ownership

It is an objective law independent of man's will that the relations of production should conform to the development of productive forces. If we

act upon that law, production will develop; otherwise it will suffer setbacks. This has been proven by historical experience. The system of three-level ownership with the production team as the basic accounting unit for rural people's communes enacted in the 1950's is in conformity with the level of development of agricultural productive forces of our country at the present stage. However, in a certain period in the past, the 10 years of chaos in particular, by pursuing the ultraleftist line, in quite a few places Lin Biao and the gang of four did as they pleased to change the relations of production and stirred up the evil wind of "premature transition." This has dampened seriously the enthusiasm of the masses and brought great damage to the development of productive forces. Some localities blindly enlarged communes and merged production teams into production brigades. Once the production teams were amalgamated into production brigades, they slaughtered pigs and sheep, fell trees and distributed reserved grain. As a result, the more the production teams were merged, the poorer they became. After the downfall of the gang of four, especially since the party Central Committee issued its two documents on problems concerning the development of agriculture, many localities have redressed the wrongdoings which had sabotaged production, and stipulated in clear terms that the production brigades which had been interrupted and taken as basic accounting units in a premature or arbitrary way should be restored to their former state--that is keeping the production teams as the basic accounting units. Thus the system of three-level ownership with the production teams as the basic accounting units was restored and stabilized. Since then, the vast numbers of commune members have been able to concentrate their attention to promoting production. Last year, in Tunliu County of Shanxi Province, some 140 production brigades which had been turned to be basic accounting units in a premature way restored the status quo ante. All this has greatly fired the enthusiasm of vast numbers of peasants for production, triggering a faster growth in agricultural production.

Grant the Production Teams Greater Power of Self-Management

Granting the production teams greater power of self-amanagement is a fundamental measure to giving full play to the enthusiasm of the production teams and enlivening the rural economy. In the past, many localities used to issue arbitrary orders and exercised rigid control over the production teams by only permitting them to concentrate on one aspect of farming; that is, they were only allowed to go in for grain production, but not for a diversified economy, thus seriously weakening the decisionmaking power of the production teams. It was allegated that once grain production failed to fulfill the output target, the party secretaries would run into trouble. So long as grain production met the target, the rest of crops could be ignored. Though "ignoring the big picture" was somewhat exaggerated, some crops which were suited to local conditions were not planted. Therefore, the ways for expanding production became narrower and production forces were gradually given more power of self-management in production, management and operation as well as distribution. Proceeding from local reality, if conditions permit, the production teams may go in for farming, forestry,

animal husbandry, sideline production or fishery. They may also explore and open more avenues for production in order to develop farming, forestry, animal husbandry, sideline production or fishery in an all-round way. Take Jiangsu Province for example. The province restructed its rural economic structure, changed the unitary agricultural economy and took the road of comprehensive development of farming, sidelines production and industry, thus achieving marked results. The proportion of output value of industries and sideline production run by the communes, production brigades and teams in 1979 occupied 56 percent of the gross output value of the province's farming, sideline production and industries, while in 1976 it accounted for only 38 percent.

Establish a Sound System of Responsiblity for Production

For many years, owing to the influence of the ultraleftist line, some localities criticized and repudiated the system of "to each according to his work" as capitalism. Consequently, people paid no attention to the results in production and ignored production quota and work efficiency, thus dampening the enthusiasm of the vast numbers of peasants for production. There was a saying, "people share food from the same big pot regardless of the fact whether they do a good job or a shoddy one. While going to work, they swarm towards it; while working, they loaf on the job all day long." In the past 2 years, by readjusting their business management, many localities established and perfected various types of responsibility systems in production. These systems which embody the principle "to each according to his work and more pay for more work" can bring into play the initiative of the vast numbers of commune members for production which result in higher pay for higher production and this benefits both the state and the individual. Take Sichuan Province for example. It widely exercised the practice of assuming responsibility for production with a fixed quota given to production groups. The fundamental advantage of this system is that the material interests of the collective and the individual are combined closely and that everyone is concerned with production output and pays close attention to the quality of farm work which is an impetus for promoting the development of production at high efficiency. The people's communes in Xindu County of Sichuan Province which carried out the above-mentioned system of responsibility for production have achieved remarkable results in increasing collective grain production and income for the commune members. Last year, the average per capita of grain for the peasants gained from collective production was 577 jin, 8.3 percent higher than the previous year and the average per capita of the peasants' net income was 124 yuan, corresponding to a 30.5 percent rise. Take Fengyang County in Anhui Province as another example. It was once a famine-ridden place where the yield had been low for years due to its oversimplified business management. Last year, they emancipated their minds, readjusted the business management so that it suited their local conditions and instituted the responsibility system that the production groups were solely responsible for production. This system was warmly welcome by the vast numbers of commune members. As a result, the grain output

in the county registered an increase of 50 percent last year. The grain sold to the state was equal to the total volume in the past 20 years. The standard of living of the commune members has greatly improved.

Encourage the Commune Member To Develop Sideline Production

Another manifestation of the ultraleftist line pursued in the countryside by Lin Biao and the gang of four was "to cut off the capitalist tails." In many places, the commune members were not allowed to engage in sideline production, their small plots of land for personel needs were taken away and the rural trade fairs banned. Under such circumstances, the hen flew away and the eggs in the coop were broken--all was lost. Complaints were heard everywhere. In the recent years, since last year in particular, in light of the "60-article regulations" on rural people's communes, various localities have implemented related policies, encouraged and supported the peasants to do a better job of sideline production. In so doing, the ways for the commune members to increase their personal income were expanded. The rural economy was enlivened and business in market towns was brisk. According to statistics, last year the volume of pigs purchased by the state attained an increase of 21.55 million pigs over the previous year, a growth rate of 20 percent; while that of eggs purchased by the state was 0.55 billion jin, a 50 percent increase. Due to the development of the collective economy and sidelines production, many commune members have the "three mores," that is, earning more personal income, having more bank savings and building more houses. People said elatedly, "If you want to be rich, raise more pigs, poultry and rabbits."

Increase the Purchasing Prices for Agricultural and Sideline Products by a Large Margin

In order to consolidate the worker-peasant alliance and help improve the life of the peasants, the state has put a considerably large sum of money in readjusting the purchasing prices of agricultural and sideline products. Last year the expenditures for increasing the purchasing prices, prices for surplus above purchase quota and negotiated prices for the major agricultural and sideline products were over 10 billion yuan. So large was the margin of price readjustment that it set a precedent in the history of new China. Owing to the rise of purchasing prices for agricultural and sideline products, according to statistics, the total amount of the state's expenditures on this respect corresponded to providing about 13 yuan in subsidy for each peasant throughout the country. This has played a great role in arousing the enthusiasm of the peasants and expanding agricultural production.

The above-mentioned facts show that once various rural policies are put into effect, the initiative of vast numbers of peasants can be brought into play, the development of productive forces promoted and the better economic results achieved. However, we must see to it that in the matter of policy, there are still many potentialities to be tapped. The main obstacle for

expanding agricultural production remains the pernicious influence of the ultraleftist line pursued for a fairly long period by Lin Biao and the gang of four, which has not been eliminated thoroughly and at present still fetters the people's minds in various degrees. Therefore, in the coming few years, the key link to increasing agricultural production is to rely on giving full scope to the power of the party's policies. Only when we readjust the weak links which are not suited to the relations of production, further implement various economic policies in the rural areas and do a lot of hard work in a down-to-earth manner, can our farming, forestry, animal husbandry, sideline production and fishery develop in an all-round way and the rural economic situation get better and become more favorable.

CSO: 4007

MEASURES ADOPTED TO ENRICH OLD REVOLUTIONARY BASES

Development in Jiangxi

Beijing RENMIN RIBAO in Chinese 28 Jul 80 p 2

[Article: "Flexible Policies To Transform Poverty Stricken Appearance of Old Revolutionary Bases in Jiangxi"]

[Text] The Jiangxi Provincial CCP Committee recently decided to institute special policies for some economically backward and hard pressed counties in old revolutionary base areas so that the people in these areas can rest and recuperate, develop production, and gradually change their economically backward appearance within 3 to 5 years.

Recently the Jiangxi Provincial CCP Committee convened a Province-wide Old Revolutionary Bases Construction Work Conference, which summarized the lessons of experience in the construction of old areas and acknowledged a need to correct programs and policies for development of the old areas in a realistic and factual way. Financial and material support from the state for the old areas is necessary, but essentially it is necessary to take the realities of the old areas as they exist and implement some special flexible policies that allow the people in the old areas to develop production through their own efforts to being about rapid change in the areas' poverty stricken appearance. Consequently the Provincial CCP Committee decided to make target counties of some economically backward mountain regions in the old areas of southern Jiangxi and Jinggangshan, designating them special economically distressed areas and adopting the following measures for these regions.

1. Exemption from state procurement grain quotas of every production team in which average grain allotments per person are less than 450 jin, making up the amount thus lost through purchases of excess in other places and through negotiated grain purchases. Following exemption from state grain procurement quotas, procurement and marketing work contracts for grain in these counties will be instituted with the guarantee that they will not be changed for 5 years.

2. Institution of a system of awards of grain to supplement the basic grain allowance in order to solve the food grain problem. The basic amount of food grain supplied the people of these areas should equal the levels of nearby production teams.

3. Liberalization of forestry industry policies. Rights to mountain forests must be settled. There should be a policy whereby collectively owned barren mountains that are forested by communes become the property of those communes; those forested by brigades become the property of the brigades; those jointly forested become common property; and those forested by individuals become individual property.

4. The system has to be relaxed somewhat, and methods have to be somewhat more flexible. In places in remote mountain regions where there are single families and households, where production is antiquated and life difficult, and where collective economies are not well developed, contracting for production with households and with individuals should be permitted in the management of production.

5. Full respect for the autonomy of production teams, specialized teams, operating teams and indi idual commune members. Production plans and planting arrangements are to be decided by the teams themselves with an adaptation of methods to suit circumstances, each deciding what they will plant and what animals they will raise.

6. Readjustment of various policies bearing on development of the economies of mountain areas. Priority treatment should be accorded to special economically distressed areas in low interest bank loans, aid funds for poor communes and poor brigades, and in the supply of the means of production and the means of livelihood. The tax revenues and commissions charged for various native products from these areas should be reduced or exempted where appropriate. Agricultural, forestry, cattle raising, sideline occupation, or fishery products brought to market for sale or exchange by communes and brigades or individual commune members should be exempt from taxation for a period of from 3 to 5 years. Motor vehicles and tractors provided for use in the forestry and cattle raising industries in mountain regions should be exempted from payment of road maintenance fees. When labor is needed for future state construction projects, these areas should not have to contribute laborers. Instead a contract system may be used with communes and brigades taking responsibility and earning income in the same way as from sideline occupations.

Nei Monggol Bases

Beijing RENMIN RIBAO in Chinese 28 Jul 80 p 2

[Article: "Liberalization of Policies in Old Revolutionary Base Areas in Nei Monggol"]

[Text] The Nei Monggol Autonomous Region People's Government recently decided on further relaxation of policies pertaining to mountain region old revolutionary bases to allow these places to become prosperous in the shortest possible time.

The old revolutionary bases in mountainous regions of the Nei Monggol Autonomous Region touch on more than 400 people's communes in 50 banners and counties, accounting for more than 40 percent of the total area and more than 3.2 million population. Production in these regions has developed slowly, and the people's lives are quite hard.

The autonomous Region People's Government recently convened a Mountain Region Old Revolutionary Bases Construction Work Conference. The conference acknowledged the need to change the face of these areas and that in addition to utmost state aid in support of every aspect of the task, some liberalization in policies was most important at the present time in order to help the masses rest and recuperate and to arouse their enthusiasm to the full. On the basis of an analysis of present circumstances in the old revolutionary bases in the mountains, the conference made concrete formulations for the liberalization of policies about cattle that may be kept by farmers and herdsmen who raise them, encouragement and support to commune members to plant trees to create forests and to grow grass, proposed enclosure of pasture lands for herds in pastoral regions, a lightening of burdens on communes and brigades in these areas, and the form of a system of responsibility for production in these areas.

9432
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INCREASED USE OF ELECTRICAL IRRIGATION MACHINERY NOTED

Beijing RENMIN RIBAO in Chinese 28 Jul 80 p 2

[Text] According to the Ministry of Water Conservancy, China's electrical irrigation machinery has developed very rapidly, and basically the three water wheels (the manual, wind, and pipe pumps) of the early stage of the liberation have now been replaced. The existing electrical irrigation machinery in the country is close to 70 million horsepower, a 700-fold increase compared with the early stage of the liberation, and is operating on more than half of the total irrigated acreage and draining more than one-fourth of the waterlogged lands. This pumping equipment has had an important effect on drought and flood resistance and irrigation development, and has promoted agricultural yield increase, agricultural mechanization, and rural electrification. Vast areas of Taihu, Dongtinghu, the Jianghan Plain, the Pearl River Delta, and the lower reaches of Subeilihe are guaranteed a harvest regardless of drought or flood. The appearance of high and stable yield lands is inseparable from the development of electrical irrigation and drainage tools.

In the business management of electrical irrigation and drainage stations, many models of excellence have appeared. Wuxi County of Jiangsu Province has 77,000 horsepower of electrical irrigation and drainage capacity, and all of it is scattered in small stations. The county uses economic measures to manage its electrical irrigation capacity to achieve good maintenance of the equipment and great benefit for irrigation and drainage. The burden on the communes and brigades is light. Last year, the county's irrigation and drainage system carried out diversified operations to net a profit in excess of 1 million yuan. The Jiamakou Electrical Irrigation Station of Linyi County, Shanxi Province, has a machinery capacity of 7,800 kilowatts to pump the water of the Huanghe to irrigate 430,000 mu of fields. Since the station was established in 1960, the water use per mu has been reduced from above 200 m^3 to 64.7 m^3, and the cost from 5 yuan to 1.1 yuan. At the same time, the grain yield per mu has been increased from 150 plus jin to 500 plus jin. In 1979, the station returned to its superiors a net profit of 76,000 yuan. The irrigation station of Gezhong-Mafang, Sanhe County, Hebei Province, is a station with 670 kilowatts of equipment. The station has only 10 employees. In the 17 years since its establishment, the level

of management improves continously, and more than 20,000 mu form a region receiving benefit from the station. The yeild per mu has been doubled in these years. The station has been self-sufficient continuously for 10 years. The maintenance and repairs have been minor, the workers are provided with grains, vegetables, meat, oil, and firewood, and it now has an accumulation of 110,000 yuan.

Most recently, the Ministry of Water Conservancy called a national electrical irrigation and drainage management conference in Wuxi County, Jiangsu Province. The electrical irrigation and drainage stations of all the areas are told to strengthen scientific management and economic management to enlarge the irrigated acreage, to conserve energy sources, and to develop comprehensive utilization for the purpose of reducing the burden on the farmers.

6168
CSO: 4007

NEW PEA-WHEAT HYBRID SUCCESS VERIFIED

Beijing GUANGMING RIBAO in Chinese 21 Aug 80 p 1

[Article by correspondents Li Wei [2621 5588], Zhao Xueli [6392 1331 4909], and Zhang Tianlai [1728 1131 0171]: "Wandoumai No 1 Attracts Attention of Geneticists Domestically and Internationally; Zhang Siwen [1728 1835 2429] and Li Zhongxian [2621 1813 1288] Breed a New Hybrid of Peas and Wheat on the Qinghai Plateau"]

[Text] Two technicians who are graduates of a polytechnic school conducted experiments with the distant hybridization of peas with wheat in the high and cold mountain regions at more than 3000 meters above sea level on the Qinghai Plateau to breed a new spring wheat variety, Wandoumai No 1. This feat has attracted the attention of geneticists both domestically and internationally.

In systematic botany, peas are classed as being dicotyledonous while wheat is moncotyledonous, and their genetic relationship is very distant. A foreign academician had already tried unsuccessfully to cross peas with wheat, but the two technicians transferred just this year to the Jiangxi Provincial Agricultural Institute, Zhang Siwen and his wife, Li Zhongxian, were successful in this effort during the period when they formerly worked in Qinghai, thereby demonstrating that peas and wheat can be crossed with each other.

This research task was given them in 1970 by a person in charge at the Qinghai Provincial Science Commission. It had as its goal the breeding of an early maturing new variety of spring wheat with consistent yields suited to high and cold regions. Both domestically and abroad, test sites for the breeding of wheat are at elevations no higher than around 2700 meters, but they selected a test base at an elevation of 3200 meters above sea level at the Xinzhe Farm in the Gonghe Basin where both natural conditions and living conditions are very poor. There is virtually no absolutely frost free period here, and sometimes even highland barley, which has a short growing season, does not reach maturity here. During the first year, they conducted hybridization experiments on a total of 5000 different varieties of domestic and foreign wheat, all of which failed. Later on, under the guidance of the farm workers, they experimented with the hybridization of

peas and wheat, hoping to transfer to the wheat the qualities of early ripening, heavy grain weight, and high protein content of peas. In 2000 combinations, only from a single combination in which a pea was the male parent and wheat the female parent, were three seeds derived. These were as precious as pearls. When they were planted the following year, one seed was eaten by a rat; one seed put forth two leaves and died; and finally remaining was a single plant, which continued to live under their assiduous care, to produce a main spike and two spikelets from which more than 100 seeds were harvested.

Comrade Zhang Siwen brought out several pea-wheat plant specimens to show me. They certainly had the characteristic shape of peas. In addition to the main spike, at each node along the main stem there was a spikelet, which is something that wheat, which belongs to the grass family, does not have. The stalks of wheat are hollow, but at the second and third nodes at the base of some of the pea-wheat, the stalks were solid. A photograph of the chromosomes in pea-wheat shows that though peas have 14 chromosomes and wheat has 42 chromosomes, pea-wheat chromosomes number both 14 and 42 and, in some cases, 28, 38, 40, 41, and 43. When tested with an amino acid automatic analyzer, both pea-wheat and peas were practically devoid of cysteine while the lysine content was double that of wheat.

In order to verify their results, they performed repeated experiments in crossing wheat with peas, always meeting with success. Subsequently, they extracted the DNA genetic material from peas and injected it into wheat and used the seeds obtained as well as the seeds obtained from the direct pollination of peas to conduct isoenzyme analysis to affirm preliminarily the essential nature of the hybridization of the wheat and the peas. It is the result of the pollen grains of the pea flower, which are rich in nutrients, carrying the DNA genetic material to the wheat, thereby causing remarkable genetic mutations in succeeding generations.

The appearance of pea-wheat aroused the attention of numerous scholars in the field of genetics. The YICHUAN XUEBAO [ACTA GENETICA SINICA], ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA], YICHUAN YU YUZHONG [GENTICS AND BREEDING], KEXUE TONGBAO [SCIENCE BULLETIN], and ZIRAN KEXUE ZHENGMING [NATURAL SCIENCES CONTEND] all carried articles providing brief accounts. The International Center for Maize and Wheat Improvement also proposed an exchange of documentary materials and seeds.

This success provided a better variety of wheat to high and cold mountain areas and to areas in general. It ripens earlier by about half a month than ordinary varieties of spring wheat, and it even ripens 1 to 3 days earlier than highland barley, which has a very short growth period. It has made possible the raising of the growth line for spring wheat in the high and cold mountain regions of Qinghai from around 2700 meters above sea level to around 3200 meters, and it avoids the great damage from cold, frost, ice and hailstones caused during the late stage of growth. When grown in other areas, it is also a good variety that is helpful in crop rotation. Pea-wheat is of superior quality and has a protein content as

high as 6.33 percent. (Ordinary wheat has from 12 to 13 percent). Yields are also quite high. Planted at Xining City in Qinghai, yields were more than 900 jin per mu, and individual communes and production brigades brought in yields of 1250 jin. In test plantings at the Taiping Commune in Xichong County, Sichuan Province, yields of 850 jin per mu were harvested. Throughout the country, more than 300 units in 25 provinces, municipalities, and autonomous regions have introduced it for cultivation, and according to rough statistics, the area of introductory planting is somewhere between 20,000 and 30,000 mu. In 1978, the Qinghai Provincial Agricultural Crop Varieties Evaluation and Approval Committee evaluated and approved this variety, and now it has been named "Wandoumai No 1." The Science Conference of Qinghai Province made an award for this accomplishment.

9432
CSO: 4007

SICHUAN DEVELOPS MALE-STERILE COTTON LINE

Beijing GUANGMING RIBAO in Chinese 28 Aug 80 p 1

[Article by correspondent Li Jiajie [2621 1367 2638]: "Sichuan Scores Major Breakthrough in Cotton Research with 'Dong A' Male-Sterile Line and 'Single Line Double Use'"]

[Text] The National Science Commission and the Ministry of Agriculture have mandated Sichuan Province to organize experts and teachers from 24 agricultural institutions of higher learning and from agricultural institues to undertake a technical appraisal here in Nanchong today of the great breakthrough in cotton research launched by Sichuan Province that has produced "Dong A" male-sterile line and "single line double use." This major scientific accomplisment has opened a new technological path for the use of the heterosis of hybrid cotton. Use of hybrid heterosis to increase output, improve quality, and increase resistance is a general law. Cotton is no exception. However, inasmuch as large-scale production of hybrid cotton seeds has been difficult for some time, it has not been possible to take full advantage of the heterosis of hybrid cotton. The complete loss of male reproductive capabilities of male-sterile cotton plants makes them very suitable material for use as the female parent in hybridization. Therefore, the discovery and nurturing of such materials received a high degree of attention from scientists and technicians concerned both at home and abroad. In 1978, a cotton technician in Yilong County discovered a primordal plant that was naturally male-sterile among "Dongting No 1" cotton seedlings. It was given the name "Dong A." Later on, the Sichuan Provincial Science Commission organized pertinent research units and institutions of higher learning to pool their resources and work together in undertaking research. Using "Dong A" as the female parent and other cotton seeds for the male parent, they began hybridization. Next, they took sterile-free plants and sterile plants from the following generation to carry out hybridization of brothers and sisters of the same parents, thereby confirming that the recessive gene in the cell nucleus that controls male sterility has applied value in the utilization of hybrid heterosis. Conduct of these cotton research methods, which were called "single line double use," required only 4 years to produce three hybrids. Results were quite rapidly achieved. Application of these research results to production over a wide area demonstrated heteroses of early sprouting, squaring, blooming and boll formation, vigorous growth, large and heavy bolls, and good fiber quality, which produced remarkable results in a more than 20 percent increase.

9432
CSO: 4007

RADIOACTIVE GENETIC BREEDING SUCCESSFULLY USED

Conference Reviews Accomplishments

Beijing GUANGMING RIBAO in Chinese 31 Aug 80 p 1

[Text] China has had very good success with the use of atomic energy radiation in genetic breeding work. According to incomplete statistics, the total number of superior varieties of farm crops, mulberry trees, fruit trees, vegetables, aquatic products, and tropical crops that have been radioactively bred amounts to 145 nationwide. These are the accomplishments gathered together by the All-China Radioactive Genetic Breeding Work Conference convened in Beijing by the National Science Commission and the Ministry of Agriculture, which was concluded on 25 August.

Radioactive genetic breeding is a new breeding technology. This kind of research work began in 1957 in China. It is said that of the more than 100 varieties that have been bred radioactively nationwide 81 have been spread over an area of more than 100,000 mu, and that 17 varieties have been spread over an area of more than 1 million mu for a total area of more than 70 million mu.

This conference also discussed and formulated a radioactive breeding research program for the next 10 years, setting three major scientific research tasks. 1) Breeding of a group of early maturing, disease resistant, high yield, superior quality new crop varieties and mutants with outstanding characteristics for use over wide areas. 2) Intensification of research in radioactive genetic breeding techniques, and increased efficiency in inducing mutations. 3) Launching of research into the mechanism of radioactive genetic breeding and exploration of new ways to induce mutations.

Delegates to the conference included 117 specialists, teachers and scientists and technicians.

Technique Explained

Beijing GUANGMING RIBAO in Chinese 31 Aug 80 p 1

[Text] Radioactive breeding entails use of atomic energy rays to radiate the seeds of crops or the organs of crops to force the genetic

materials to undergo changes leading to the occurrence of mutations, which through breeding will produce new varieties.

Radioactive breeding is characterized by a high frequency rate for variations, a broad latitude for variations, and generally rapid stabilization of varieties thus bred. It is also able to produce some mutants that would be difficult to derive in nature or through conventional breeding. Characteristics such as early maturation, resistance to disease, and fine quality are examples of characteristics. For example, the Zhejiang Provincial Agricultural Institute's Atomic Energy Unit used 60 r of cobalt to irradiate a variety of "Kezi No 6" paddy rice. After 2 years and 4 months of effort, they bred the new variety, "Yuanfengzao," which ripens 45 days earlier than "Kezi No 6." The new variety of wheat, "Emai No 6" bred by the Hubei Provincial Agricultural Institute; the new variety of corn, "Luyuandan No 4," bred by the Shandong Provincial Agricultural Institute; and the new variety of cotton, "Lumian No 1," bred by the Shandong Provincial Cotton Institute, all possess this characteristic.

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FINANCIAL AFFAIRS OF RURAL COMMUNES DISCUSSED

Gujia Production Brigade

Beijing GONGSHE CAIWU [COMMUNE FINANCIAL AFFAIRS] in Chinese No 4, 25 Jul 80 pp 13-14

[Article: "Gujia Production Brigade Launches Campaign of Economic Analysis To Overcome Blind Complacency and Formulate Measures for Increased Production"]

[Text] Gujia Production Brigade in Hehua Commune in Liuyang County, Henan Province reaped a bumper harvest in 1979 and income distributed to commune members averaged 157 yuan. This spring, this brigade aroused the masses to launch a big discussion about building a prosperous brigade. As a result of the discussion, five of the six production teams in the brigade planned to achieve average distributions of income this year amounting to more than 200 yuan. Formulation of this plan increased the confidence of the cadres and masses alike, but there were some people who maintained a feeling of blind optimism. They could see only the good aspects, and were unable to see weak links. They felt that "policies have been implemented this year; the cadres have taken responsibility; and the masses have put their shoulders to the heel, so production naturally went up." In order to overcome this kind of blind complacency, the party branch in the production brigade convened a Production Team Cadre Meeting for the conscientious analysis of economic activities, guiding everybody to compare this year's agricultural production situation with last year's, and to analyze how this year's production differed from last year's in five respects. 1) Spring crop harvests were different from last year. The spring rape harvest produced 4,960 jin of oil last year for an income of 7,630 yuan. This year only 2,080 jin of rape was harvested, and income was 2,648 yuan, a decrease of 4,982 yuan. 2) Tea oil may show a decline in production. Last year tea oil production was 11,600 jin providing an income of 12,466 yuan, but this year only 8,308 jin will be produced for an income of 8,864 yuan, a decline in income of 3,602 yuan. 3) Last year three teams propagated 700 mu of seeds to earn income of 7,200 yuan. This year they halted seed propagation, so this income no longer exists. 4) Collective hog raising continued to decline. Last year income from collective animal raising amounted to 27,403 yuan. This year, hog farms in three teams

were disbanded, and there will be a reduction in income amounting to 12,233 yuan. 5) Sideline occupation processing is off. Last year units of the sideline occupation company brought in materials for processing, but there are no goods to process this year, and income will be reduced by 3,540 yuan. Thus, the total reduction in income will be 31,557 yuan. There are 1,030 people in the entire brigade, so the average per capital reduction in income will be 30.64 yuan. Everybody still looks back to last year when total income for the brigade increased by 64,958 yuan for an average 63 yuan per person. Of this amount, an increase in the price of farm produce brought an increase of 27,091 yuan, or 21 yuan per person. Calculated in terms of no change in price, actual average increased income per commune member would have been only 42 yuan. This year, average total per capital income will show an increase of 60 yuan over last year's 201 yuan, and this required greater exertion than last year and more vigorous measures in order to fulfill the plan.

As a result of the analysis of economic activity, the understanding of the cadres and masses was improved and they all felt that if realization of the plan is to be assured, it will definitely be necessary to put their bands to an increase in per unit yields of the crops currently being grown, make vigorous efforts to open production avenues, and to organize the labor force to advance deeply and broadly in production. As a result of repeated discussion and repeated implementation, they were determined to work hard in three different areas to assure the realization of the plan to build a prosperous brigade.

1. Strive to increase grain yields per unit of area. Following democratic discussion, each production team set to work to get per mu yields of 1400 jin of grain this year from an area of 1,191 mu. The plan calls for increased yields of 141 jin per mu over last year and a total increase in production of 157,000 jin for a possible increase in income of 18,134 yuan.

2. Active development of collective hog raising. In order to reverse the tendency toward decline in collective hog raising, it is necessary to continue to operate collective pig farms, and to have special households raise hogs, and to arouse commune members for private raising of publicly owned hogs. At the present time, 190 of the 230 households in the entire commune are engaged in collectively raising 190 hogs, which will bring an increase in income of 18,460 yuan.

3. Institute continuous production. Last year, the Zejia team began to make xuezaopei [7185 2483 0975] (a pastry), bringing in materials for processing. Within half a month, its income was 2000 yuan. In order to make sure of this income, they decided this year to produce the raw materials themselves, process them themselves, and market the produce themselves. Now there are five units throughout the brigade that are planning to plant 150 mu of glutinous rice, and 9 mu of taro to process 55,000 jin of xuezaopei for a possible from processing of 9000 yuan.

4. While guaranteeing increased production of grain this year, 48.5 mu of mat grass has been planted as well, and each mu can bring an income of 300 yuan, an increase of 7,290 yuan over last year.

5. Adaptation of methods to local circumstances to change from low income crops to high income crops. There are 48 mu of drylands throughout the brigade, all of which were formerly planted to red anise from which the income was not high. This year, they planted 31.7 mu of medicinal herbs; 3 mu of hybrid gaoliang, and 8 mu of intercropped kumquat trees. Each mu should produce an income of 200 yuan for an increase of 4,220 yuan over last year.

6. Comprehensive use of water sources in an effort to produce more fish. This brigade used to give attention only to the use of water surfaces of mountain ponds for irrigation, neglecting the raising of fish. Last year's annual output of fish from the 62 mu of water surface in the brigade was 7,440 jin, for an income of 7,054 yuan. This year 13,000 fish have already been raised, which should produce 13,500 jin of fish for an income of 11,680 yuan, an increase of 4,626 yuan over last year.

7. Use of slack time on farms to bake bricks and tiles. Last year the brigade baked 410,000 red bricks for an income of 20,500 yuan, and it plans to bake 1 million red bricks this year for an income of 43,000 yuan, or an increase in income of 22,500 yuan.

8. Organize special, full-time groups to handle the business enterprises of the brigade. In order to change the situation of poverty and blankness in the brigade, a 12-man special full-time group responsible to the deputy brigade leader was organized to be responsible for income from brigade enterprises. An agreement between the Foreign Trade Bureau and the Commune and Brigade Enterprises Bureau has already been concluded for the production of 1.5 million fireworks and firecrackers, from which it is estimated one echelon of the brigade can earn an income of 30,000 yuan, an increase of 11,400 yuan over last year.

9. Encourage greater investment in handicraft industry and sideline industry personnel, planned investment in personnel in the handicraft industry and sideline occupation industry as reported by the brigade was 13,416 yuan, an increase of 6,810 yuan over last year.

10. Additional machinery to handle processing of incoming materials and dispatch of products. As a result of its analysis of economic activities, the Nanliu production team immediately purchased a pulverizer in order to increase its income. Put into production, it has already recovered a part of the investment. The three new machines added to the brigade should increase income by 2,357 yuan over last year.

If diligent attention is given to the above 10 measures, a total increase in income of 105,010 yuan should be realized. Deducting a decline in income of 31,557 yuan during the first half of this year as compared with last year, an actual increase of 73,453 yuan in income over last year should be realized, and average total per capita income should increase by 71 yuan. The broad masses of cadres and people have said, "This game of chess is going well. It has cleared our heads, and we have found the road to wealth. Analysis of economic activity is good, and from now on we'll keep doing it every quarter."

Rewards for Excess Production

Beijing GONGSHE CAIWU [COMMUNE FINANCIAL AFFAIRS] in Chinese No 4, 25 Jul 80 p 23

[Article by Xing Jisheng [6717 4480 3932]: "Preliminary Exploration of Rewards for Excess Production Issue"]

[Excerpt] Nowadays, a system of responsibility for production with calculation of remuneration for joint output is being promoted in agricultural production everywhere. In most cases, the specific method used is division of production teams into work groups responsible for a fixed output using a fixed amount of labor, with rewards for excess production and punishment for reduced production. Experience has shown that implementation of this method can better combine the collective production and the material welfare of commune members. It is useful in arousing the enthusiasm of the masses, in improving labor productivity, and in promoting the growth of production. But when a work team exceeds production norms, how should it be rewarded? Should it be rewarded with the excess or should it be given a portion? And what is the proper size of this portion? Presently there is no unanimity of understanding about this matter, and the actual methods used in various jurisdictions differ. Consequently, study and solution to this problem for the correct handling of relationships between production teams and work teams requires both maintenance of the production team as the "foundation," preservation of the system of public ownership, and consolidation and strengthening of the collective economy, as well as ensuring that the more common members work, the more they get, and that they stand to gain. This requires implementation of rewards for excess production, which is both beneficial for the development of collective production and beneficial for individuals. If too much emphasis is placed on individuals, the collective economy may be damaged and the significance of the implementation of this system of responsibility may be lost. If too much emphasis is placed on the collective, the welfare of individuals may be damaged and the enthusiasm of the masses dampened. In 1979, the Mamo Production Team of the Chenhu Commune in our county produced grain at a cost of 0.047 yuan per jin as calculated on the basis of its total output and expenses. On the basis of output prescribed for spring, two work teams jointly exceeded production of grain by 22,000 jin, all of which was given the work team without deduction of production expenses, thereby providing the production team with a net subsidy of 1,034 yuan. Last year production costs per jin of grain

were .06 yuan at the Yangba No 1 Brigade of Liquiao Commune. Two work teams jointly exceeded production of grain by 20,893 jin. For the production of this grain, the production team expended 1,253 yuan, and the work teams gave 8,354 jin of the grain to the production team in a 40 percent apportionment to the production team of excess production. In money terms, at a price of .13 yuan per jin, this had a value of 1,128 yuan, and the production team handed back 125 yuan. Obviously, the difference in rewards for excess production given these two work teams was not reasonable.

Calculating Apportionment of Grain

Beijing GONGSHE CAIWU [COMMUNE FINANCIAL AFFAIRS] in Chinese No 4, 25 Jul 80 p 25

[Article by Wang Guanghuai [3769 1684 2037]: "Use of the per Thousand Rate in the Distribution of Grain"]

[Text] Production teams in rural communes are the basic accounting units for the direct organization of production and distribution. In production teams there are many varieties of grain, and grain for the consumption of commune members is distributed many times. Attention must be given to the proportional mix of the different varieties of grain or the different qualities of the same variety of grain in the total distribution of grain, and a rapid calculation must be made of the amount of grain that should be distributed to every household. A brief explanation is provided here of a method for calculating distribution that employ the per thousand rate, taking into account the human labor ratio. First, use the summer or the autumn accounting table for the calculated take home portion of grain for commune members, figuring the per thousand rate of the total grain distribution in the brigade that is due each household. Each time grain is distributed, no matter the variety, the per thousand rate is used to calculate the amount. Formulas for calculations are as follows:

The per thousand rate for distribution of grain to each household = the amount of grain owing the household ÷ by the total grain distribution throughout the brigade.

The amount of grain due each household each time = the total amount of grain distributed each time X the household's distribution of grain per thousand rate.

For example: A certain production team has 30 households of common members, and the summer allocation of grain totals 20,000 jin. Of this total, Zhang San is due distribution of 600 jin and Li Si is due 400 jin. The remaining 28 households should share the remaining 19,000 jin. Before the first grain is distributed, calculate the per thousand rate for grain distribution to each household on the basis of the formulas given above. The computations are as follows:

(1) the per thousand rate of each jin of grain: 1 20,000 = 0.050%.

(2) the per thousand rate of grain due each household: the per thousand rate of grain due Zhang San = 600 x 0.05% = 30%. The per thousand rate of grain due Li Si = 400 x 0.5% = 950%.

Let us assume that 5000 jin of wheat is distributed the first time. Zhang San's share of wheat should be 5,000 x 30% = 150 (jin) Li Si's share of wheat should be 5,000 x 20% = 100 (jin) (The remaining household shares may be extrapolated from this)

The second time, 1,500 jin of peas are distributed. Zhang San's share of the peas = 1,500 x 30% = 45 (jin) Li Si's share of the peas = 1,500 x 20% = 30 (jin) (The remaining household shares may be extrapolated from this)

This method of calculating distribution of grain both includes individual amounts due and also includes amounts due on the basis of labor. This method eliminates consideration of the mixing of different varieties of grains or grains of different quality. At final accounts time at year's end when balancing of grain shortages is done, this will save a lot of figuring.

Cutting Costs in Liaoning

Beijing GONGSHE CAIWU [COMMUNE FINANCIAL AFFAIRS] in Chinese No 4, 25 Jul 80 pp 26-27

[Article by Jin County Agricultural and Forestry Bureau: "Jin County Puts Responsibility for Expenses Work Method into Effect"]

[Excerpts] Jin County in Liaoning Province is located on the Liaoning Peninsula in the close-in suburbs of Luda. It is an area with a diversified economy that produces grain, oils, vegetables, fruits, and products of the sea. Since last year, it has put into practice a system of responsibility for expenses in its farmlands, vegetable plots, fruit orchards, fishing industry, hog raising, and farm machines in order to promote increased production and increased income, reduce production expenses, enlarge the collective portion retained, and increase the income of commune members. In a comparison of 1979 with 1978, total grain output throughout the entire county increased 16.3 percent; total edible oil production increased 145.9 percent; total production of fruit increased by 71.4 percent, total production of products of the sea declined by 8.3 percent, and live hogs increased by 1.2 percent. Total income for basic accounting units throughout the county increased by 30.3 percent, and total disbursements amounted to 34.6 percent of total disposable income, for a decline of 5.3 percent. Collective retention amounted to 16.8 percent of total income, an increase of 4.4 percent. Average per capita income was 164 yuan, an increase of 48 yuan.

In 1979, every jurisdiction started out with the system of responsibility for production that had been established everywhere, and production teams, being practical and taking account of past situations, combined the current year's production conditions and production tasks with democratically formulated expense quotas, and instituted a system of responsibility for expenses in work teams. Specifics are as follows:

Cropland production. Production teams instituted "four fixeds" for the work teams, namely, fixed amounts of fertilizer, fixed amounts of seeds, fixed amounts of agricultural pesticides, and fixed amounts of miscellaneous support in horses and vehicles. It was stipulated, in general, that the award for savings of expenditures would be from 50 to 70 percent of the amount saved; the fine for excess expenditures would be from 20 to 30 percent of the excess. No award would be given when reduction in expenditures was accompanied by a decline in production.

Vegetable production. Fixing of specific responsibilities for expenses according to the different situations prevailing in old and new vegetable growing areas. Some instituted the "four fixeds," namely fixed amounts of fertilizer, fixed amounts of agricultural pesticides, fixed amounts of seeds, and fixed amounts of miscellaneous support in horses and vehicles. In addition, they added a fixed amount of plastic sheeting for the protection of the protection of the vegetables to make "five fixeds." Regulations on rewards and punishments were generally the same as for cropland production.

Fruit tree production. The "four fixeds" were instituted down to the team level, namely fixed amounts of fertilizer, fixed amounts of agricultural pesticides, fixed hydroelectric expenses, and fixed expenses for the maintenance and repair of machines. The award for savings while exceeding output norms and exceeding value of output was 50 percent of the saving. When there was a saving while exceeding output norms but not exceeding value of output, no reward was given. When output norms were exceeded and the value of output exceeded but prescribed expenditures were exceeded as well, punishment was payment of 20 percent of the excess expenditures.

Hog production. Fixed amounts of concentrated feed, fixed numbers of implements, and fixed medical expenses were instituted in hog raising with different requirements depending on whether the hogs were male or female, or whether fattened hogs or piglets were being raised. In the implementation of responsibility for expenses at pig farms, work was recorded, for the most part, for net earnings. The greater the net earnings, the greater the sum received; the less the net earnings, the less received.

Care of farm machinery. Accounting for individual machines was instituted throughout. A system of "three fixeds" was instituted for different kinds of machines, namely fixed consumption of petroleum, fixed repair expenses, and fixed maintenance costs. Regulations regarding rewards and punishments were of the two kinds. One was an award of profits in which the award was 10 percent of the amount in excess of the norm. The other was an award for savings in expenditures on individual items. For each 100 jin saving of petroleum, the award was 50 percent of its value (in money terms).

Sideline occupation production. Responsibility according to the kind of sideline occupations involved. First, fixing of reasonable production costs, and the institution of proportional division, as for quarry stone or the export of labor. Second was responsibility for profits with annual profit norms being set and awards offered in the form of a proportion of profits in excess of norms. Third was institution of "five fixeds," namely fixed number of personnel, fixed tasks, fixed amounts of time, fixed expenses, and fixed remuneration. Savings in any category would be rewarded, and excess punished.

In the fishing industry, accounting was done by the single boat with expenses for each boat being set, namely, fixed consumption of petroleum, fixed number of nets, fixed maintenance and repair, and fixed amounts of ice used. Awards of from 20 to 30 percent of any savings in expenditures were given.

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BRIEFS

AUTUMN, WINTER SOWING--Preparations for winter wheat sowing are underway in northern China, and rural cadres and commune members are striving to overcome various problems caused by drought, rain or waterlogging. At the completion of summer harvest, meetings were held in various major wheat producing areas to sum up experience gained in summer grain and oilseed production and to map plans for autumn and winter sowing, paying special attention to the entire farming structure and to the annual crop plans; and rational adjustments to the over-wintering crop acreage were made. As a result, this year's autumn and winter sowing acreage is smaller than that of last year, and it will be necessary to raise the unit yield in order to increase the total output. While keeping the acreage of winter-sown grain and green manure crops stable, provinces along the Changjiang River plan to expand their rape acreage this year. Despite recent rainfall, which is good for wheat sowing, some areas in northern China still do not have sufficient rainfall and soil moisture for sowing, making counter-drought measures necessary. [Beijing RENMIN RIBAO in Chinese 21 Sep 80 p 1]

WHEAT DISEASE CONFERENCE--The Fifth National Conference on the Prevention and Study of the Take-All Disease [quan shi bing] of wheat was recently held in Taian, Shandong. Domestic and foreign methods to prevent and treat the disease were introduced at the conference. This disease has already appeared in 17 provinces and municipalities. Shandong Province and the Hexi corridor are the most seriously afflicted areas. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 17 Sep 80 SK]

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BRIEFS

PEST CONTROL--In view of the threat of rice pests brought into the province by excessive rains in mid and late-August, the Anhui Provincial Government has issued a circular calling on all localities to take measures to protect late-autumn crops against pests. Recalling its losses in double-crop late-rice production caused by a major pest in 1975, Anqing Prefecture has aroused the people to whip up an upsurge in the prevention of pests. As of now, the prefecture has carried out preventive activities on its more than 1.7 million mu of crop land. Chaohu Prefecture has also completed such activities on some 2.7 million mu as a first-stage task. Wuhu, Huizhou, Luan and Chuxian prefectures have taken necessary initial measures in the light of the pest situation in their areas. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 1 Oct 80 OW]

AUTUMN CROPS CONFERENCE--Hefei, 20 Sep (XINHUA)--Instead of letting the provincial agricultural committee hold the annual autumn crops conference alone, the Anhui CCP Committee this year invited some noted scientists and agrotechnical cadres to attend. Together with the leading cadres of wheat-producing areas, they discussed how to increase wheat production in Huiaibei. Wang Tengjiao, vice president of the Anhui Academy of Agricultural Sciences, called for rational application of fertilizer. Wang Jingcao, deputy director of the provincial scientific and technological committee, proposed to establish a rational agricultural structure as a means of increasing wheat production. Yang Jike, vice governor of Anhui, emphasized giving play to localities' strong points. [OW241321 Beijing XINHUA Domestic Service in Chinese 0727 GMT 20 Sep 80 OW]

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BRIEFS

FIELD TENDING CONFERENCE--The Fujian Provincial CCP Committee and the Provincial People's Government held a provincial telephone conference on the evening of 15 September. The conference called on all localities to strengthen leadership, concentrate efforts, strengthen the late-stage field tending work in September and October, firmly grasp the production of autumn grain and industrial crops and do everything possible to reap a bumper harvest. Guo Chao, secretary of the Fujian Provincial CCP Committee and vice governor of Fujian, presided over the conference; and Wen Fushan, Standing Committee member of the Fujian Provincial CCP Committee, spoke. [HK220357 Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 16 Sep 80 HK]

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FIGURES ON RAISING CATTLE ON MOUNTAIN LAND QUESTIONED

Guangzhou NANFANG RIBAO in Chinese 21 Aug 80 p 2

[Article by Zhang Heqing [1728 3109 3237], Planning Office, Zhanjiang Farm Reclamation Bureau: "This Account Has Been Wrongly Figured"]

[Text] On 26 July, the NANFANG RIBAO published an article written by Comrade Li Peiwen [2621 3099 2429], deputy director of the South China Agricultural Institute, titled "Look Not Only to a Few Mu of Land But Also to the Mountains for Food." In this article, the accounting on cattle raising was incorrect, and it is raised here for study.

This is how Comrade Li Peiwen figured cattle raising in mountain areas. Guangdong Province has 180 million mu of mountains of which half, or 90 million mu, could be used for livestock bases. According to data from the Hainan Livestock Institute, 5.5 mu of mountainland is required to raise a single head of livestock, and just about 20 million cattle could be raised on the 90 million mu. But we would not raise that many, but rather only 8 million head. At a live weight of 500 shijin per head and a dressing percentage of 62 percent, each head would yield more than 300 jin of meat. From the 8 million head throughout the province, the yield would be more than 2.5 billion jin of meat, the equivalent of 5 billion jin of grain. In terms of calories, it would be the equivalent of 12.5 billion jin of grain. Therefore, the annual shortfall of more than 3 billion jin of grain could be solved entirely by the people of Guangdong themselves without imports or without the need for transfers of grain from other provinces.

This accounting method merits deliberation.

First of all, the capacity of mountain areas for the raising of cattle is not the same as the figures for slaughter cattle. For one thing, even though use of mountain land for the raising of cattle is a major action meriting attention throughout the province, a certain number of cows and bulls have to be kept, and these animals cannot be figured as slaughter cattle in calculating the quantity of meat produced. Secondly, to get a live weight of 500 shijin under good feeding conditions is not

hard to achieve within 1 to 1.5 years, but with feeding on a large area of mountain land, it would be hard to achieve within 2.5 to 3 years or even longer. So, except for the slaughter cattle provided for slaughter in a given year, we would have to continue to raise again as many or twice again as many calves or heifers awaiting fattening. Third, no matter whether it is cows, bulls, calves, or heifers being fattened, there is no assurance of a 100-percent survival rate, nor will each cow produce two healthy calves every 3 years. Therefore, for every 8 million head of cattle, only 2 million (calculated at 3 years for raising) or 2.4 million (calculated at 2.5 years for raising) of slaughter cattle will be provided for butchering. Even were no breeding cattle to be raised in the mountains of Guangdong but calves imported entirely from elsewhere (which is actually an impossibility), at best between 2.6 million and 3 million head of slaughter cattle would be produced yearly. It would be absolutely impossible to get 8 million.

Second of all, for an annual yield of 8 million slaughter cattle, about 30 million head of cattle would have to be raised in mountain regions throughout the province. If each head required 5.5 mu of land, a total of 165 million mu of mountain land would be required. If there is only 180 million mu of mountain land in all Guangdong, I fear 165 million mu could not be spared for cattle raising.

Third is the matter of the conversion of meat to grain terms. In the calculation of calories, 1 jin of beef equaled 5 jin of grain. Production of 8 million slaughter cattle throughout the province would be the equivalent of 12.5 billion jin of grain, not only sufficient to solve the grain shortfall for all of Guangdong Province, but enough to provide a huge surplus as well. Even were only 2 million head of cattle to be produced annually, that would be just about enough. Whether or not 1 jin of beef is the equivalent of 5 jin of grain is a matter related to people's life styles. Some people prefer 5 jin of grain to 1 jin of beef, while other people are just the opposite. A total 1 to 5 converstion would not be very workable, I fear.

Fourth, I feel that the simplistic deduction of a percentage of all the mountain land in Guangdong Province as an area devoted to the raising of cattle is unscientific. Such calculations frequently are far removed from realities. For example, it would be very difficult to raise cattle in the high mountains, or in rocky mountains where no grass grows, or in mountain wildernesses far removed from population centers. As to just how much mountain land should be devoted to the raising of cattle requires a general survey from bottom to top, and most important is a soliciting of the views of the masses. From an economic angle, cattle raising is not the optimum program for the utilization of mountain wildernesses. For example, their per mu output value is not as great as forests.

The above several points are merely my personal views and do not constitute opposition to cattle raising in mountain areas of Guangdong Province nor a negation of Comrade Li Peiwen's article. The purpose for these remarks is only to express my own viewpoint.

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SHENZHEN HOLDS MEETING ON DEVELOPING AGRICULTURE

HK030116 Guangzhou Guangdong Provincial Service in Mandarin 2345 GMT 2 Oct 80

[Excerpts] The Shenzhen Municipal CCP Committee recently held an enlarged Standing Committee meeting, which demanded that the people of the municipality work hard in concert to promote agricultural production so as to stimulate the building of the special zone and strive to build the Shenzhen special zone into a modern city. Guangdong Provincial CCP Committee secretary Wu Nansheng presided and spoke at the meeting.

The meeting held: The construction of special economic zones at the great southern gateway of the motherland is a new affair which has attracted domestic and foreign attention. However, in building the special zones, we cannot neglect agriculture. The special policies and flexible measures are closely linked to agriculture. Only if agriculture is promoted can we fill the Hong Kong markets with more commodities and get more foreign exchange for speeding up the building of the special zones. Hence, we certainly cannot abandon agricultural production when building the special zones; we should build up the rural areas of Shenzhen Municipality as the outskirts of the special zone and as a base for agricultural and sideline production.

The meeting stressed: The leaders of the zone and the communes must concentrate efforts on promoting rural work and grasping agricultural production. They must not spend too much energy on economic dealings with foreign countries.

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LETTERS COMPLAIN OF FARM CHEMICAL MISUSE

Guangzhou NANFANG RIBAO in Chinese 23 Aug 80 p 2

[Letters to the Editor]

[Text] Editor's Note: Though the problems reflected in the several letters to the editor printed here are individual phenomena, they also deserve attention. Willful adulteration of food with toxic farm chemicals constitutes criminal behavior that serously endangers the health of the populace, and which must be firmly stopped. Recently letters from the masses everywhere report quite a few problems existing in the hygiene of food in rural markets. It is hoped that leaders and market managers concerned as well as health and epidemic prevention departments will do a good job of diligently propagandizing knowledge of hygiene, will formulate needed regulations for policing hygiene, and will frequently carry out inspections and checks, promptly putting a stop to or otherwise handling anything not in accord with sanitary requirements.

Comrade Editor:

Recently the Xinxing County Health and Epidemic Prevention Department discovered that a food called "deep fat frieds" sold from a privately operated stall at the Jicheng Commune country fair was contaminated with the agricultural pesticide, Rogor. A check of 12 stalls revealed that this was the case at all of them.

"Deep fat frieds" are made from soybeans. It is said that when "deep fat frieds" are being fried, mixing in a little bit of Rogor makes the "deep fat frieds" shiny and gives them an attractive color. This is criminal behavior that damages others for one's own profit. Rogor is a highly toxic agricultural pesticide, and even though no symptoms of poisoning result at once when people ingest it, it can cause damage to human health. It is recommended that health and epidemic prevention

departments intensify health checks of small food stalls to promptly put a stop to anything that does not meet with sanitary requirements, and deal seriously with offenders.

Xinxing County CCP Committee, Huang Erchong [7806 1422 1504]

Comrade Editor:

Now when the weather is so unremittingly hot and food spoils easily, extreme attention should be given to sanitation and the prevention of spoilage. Nevertheless, some aquatic products units and individual enterprisers offer rotten salted fish for sale in the markets. In an effort to earn money and make profits, some people sprinkle organic phosphate insecticide or Rogor insecticide on the salted fish, and this seriously endangers the health of the masses. One day recently, eight or nine people became poisoned from eating salted fish at the Jinshan country fair in Wenchang County. Two children of a cadre at the broadcasting station of my commune were poisoned from eating salted fish on which pesticides had been used to prevent spoilage. A hospital saved them, but it was 10 days before they were out of danger. We call upon leadership at all echelons and on sanitation and epidemic prevention and market management authorities to intensify their supervision and checking of markets to put a firm stop to the reckless use of pesticides to prevent spoilage of salted fish and other food items, and to conscientiously propagandize scientific knowledge of sanitation in order to protect the health of the masses.

Jinshan Commune, Wenchange County, Lu Liequan [0712 3525 0356] and Han Lunguang [7281 0243 0342]

Comrade Editor:

Here in Gaozhou County, accidents involving injury or death to people and farm animals are constantly occurring simply because some communes and organizations do not pay attention to safe use and care of agricultural pesticides. For example, some people became poisoned from eating fish contaminated with the pesticide, Toxaphene, and from drinking polluted water. When some production teams used "zinc phosphate" to poison rats, they did not have people who knew what they were doing put out the bait or recover the bait. The poisoned bait got out into the open country where fowl and farm animals ate it and became poisoned. In order to insure the safety of people and farm animals, Gaozhou County recently required every commune and production brigade to launch vigorous propaganda to educate people in the safe use of pesticides, to make diligent efforts to intensify the safe handling of pesticides, and to firmly prohibit the use of pesticides in ponds, rivers, pools or catchments to poison fish, so as to avoid pollution of water sources.

Gaozhou County, Zhong Xunfu [6945 3169 4395]

UTILIZATION OF OCEAN FISHING RESOURCES URGED

Guangzhou NANFANG RIBAO in Chinese 7 Aug 80 p 2

[Article by Fei Hongnian [6316 7703 1628], Nanhai Aquatic Products Institute, National Aquatic Products Bureau: "Use Guangdong's Special Advantage; Develop the Ocean Fishing Industry"]

[Text] Guangdong is a coastal province that fronts on the boundless South China Sea. It has a coastline several thousand kilometers long, an island coastline of 2,500 kilometers, 562 islands and islets, and 153 fishing ports, which are extremely beneficial to the development of an ocean fishing industry (ocean fishing and ocean hatcheries). The ocean fishing industry in Guangdong Province provides a certain proportion of the output of aquatic products nationwide, and it amounts to more than 70 percent of the total output of aquatic products throughout the province. However, for many years the situation in the Guangdong fishing industry has been as follows: Increases in numbers of fishing boats, and their horsepower has not been commensurate with resources, and as a result the phenomenon of excessive use of inshore ocean resources has occurred, while the ocean hatchery industry has remained in a state of stagnation. Now when the NANFANG RIBAO is about to begin a discussion on the subject of "How To Make the Most of Guangdong's Special Advantage and Enliven the Economy," I would like to take this opportunity to air a few personal views about the special advantages of Guangdong's ocean fishing industry and the future emphasis of work.

Let us talk first about the special advantages of Guangdong's ocean fishing industry.

The area of the South China Sea is vast, amounting to a 440,000 square mile continental shelf of fishing area of which the Tongking Gulf comprises 120,000 square kilometers. As a result of limitations in the horsepower, tonnage, and equipment of fishing boats, most fishing boats, including motorized boats, motorized sailboats, and junks, concentrate their fishing in inshore areas with a water depth of less than 100 meters. In water depths of less than 60 meters, fishing boats are especially tightly packed, creating a phenomenon of excessive fishing of inshore

aquatic resources. But aquatic resources at ocean depths of from over 100 to 200 meters have not been fully utilized. The results of experimental fishing done by a survey ship of the Nanhai Aquatic Products Institute in recent years has demonstrated that outer ocean areas of the South China Sea are areas with a future for development where fishing netted large amounts of deep water crustaceans and deep water fish. Therefore, in the face of a situation of overfishing of aquatic resources in inshore areas, attention must be turned to this beneficial alternative, and deep ocean fishing should be actively developed.

The South China Sea is located in the tropics and semi-tropics where a variety of fish abound, and where close to 1000 varieties have been recorded. This is more than the total number for the East China Sea, the Yellow Sea and the Bohai combined. But a large number of varieties does not mean that there is an abundance of every kind. On the contrary, the quantity of the individual varieties of the major economic fish are far from being as numerous here as in the East China Sea and the Yellow Sea. For example, in the East China Sea, annual output of hairtails and large yellow croakers is almost 1 million tons, while it amounts to 100,000 tons in the South China Sea, and other varieties in small and scattered schools is unfavorable to high per net catches, and this characteristic may be put to use in the development of trawling, seining, harpooning, a and angling operations. In the case of harpooning and angling, not only is no damage done to fich resources, but superior quality fish of high value may be sought this way. Guangdong fishermen have abundant experience with diversified fishing operations, but it was only in 1966 following success in purse seining using lights that a tendency toward standardization of a single kind of fishing operation became apparent. It is necessary to change the unhealthy tendency of seeking after quantity and not seeking for quality. We should use the numerous varieties of fish to vigorously develop diversified operations.

At the present time ocean fishing throughout the world is facing danger from overuse of resources. Reportedly 25 of the world's fishing grounds are being overfished tc one degree or another. Between 1968 and 1978, total world production of aquatic products fluctuated around 70 million tons, and the 6.8 percent increase maintained for the previous 20 years nad disappeared. The situation in every ocean area of our country is the same as this. In the face of this generally unfavorable tendency, most fish in inshore ocean areas of Guangdong have a short life cycle (usually from 4 tc 7 years); they grow rapidly, reach early sexual maturity, have a long period of reproduction, and a quick renewal of generations. When excessive use of resources shows up in their destruction, all that is necessary is adoption of active protection measures, and they will quickly revive. For example, erchangjidiao [0059 7022 2765 9648] [probably a kind of porgy] are a superior quality fish found in fair abundance in the Tongking Gulf, which for 30 years were put under great fishing pressure by fleets of Japanese fishing boats. Additionally, their young were fished for along the shore by the masses, as a result

of which this resource was seriously damaged. In implementation of the 1964 State Council promulgated trial regulations pertaining to protection of the breeding of aquatic resources, the catch of small fish was prohibited for 2 years. During the third year, large numbers of erchangjidiao were seen once again in the fishing gounds. Unfortunately the regulation was not kept in effect, and further damage has been done in recent years. This example shows that replacement of generations is rapid, and the characteristic of easy renewal of resources is one that Guangdong can use to advantage. With a rational use of resources, and the adoption of specific measures in regard to resources that have been damaged, the resources can be revived.

Ocean hatching has a long history in Guangdong Province. It began several hundred years earlier than in other countries of Southeast Asia, so the masses possess abundant experience in hatching. Hatched varieties include fish, oysters, mussels, abalone, scallops, pearl oysters, area subsrenata Lishchke, varieties of prawns, red algae, and laver. The shallow ocean area that the Guangdong coast provides for hatching amounts to 1.73 million mu, of which only 470,000 mu is used at best. During the Great Cultural Revolution, large-scale reclamation of the sea to create farmland destroyed a lot of fish spawning grounds, so now the breeding area is only somewhat more than 200,000 mu. Internationally there is a major trend toward future development of ocean hatcheries. It can provide people with rare fish, shrimp, and mollusks, and hatching costs are low. The shallow seas around Guangdong provide a naturally endowed environment for ocean hatching, but the quantity of ocean hatching is presently very low. All that is necessary is for the leadership to give serious attention, and they will be able to make full use of superior conditions to revive and advance the untapped potential of the ocean hatching industry, which is very great. In addition, in the area of neighboring Hong Kong and Macao, and particularly in the two cities of Shenchuan and Zhuhai, which the State Council has designated or special economic areas, foreign traders and fellow countrymen from Hong Kong and Macao are welcome to come forward and invest in joint enterprises. If this is done, not much time will be required for the rapid development of Guangdong's ocean hatching industry, and not only will the people be provided with more protein from aquatic products, but they can be easily exported to earn foreign exchange.

Several recommendations about future work emphasis are given below.

First, adoption of effective measures to actively protect aquatic resources in inshore areas. During the past 2 years, the State Aquatic Products Bureau and the China Aquatic Products Society have convened several conferences to discuss the problem of aquatic product resources. Aquatic product specialists from throughout the country unanimously acknowledge that China's inshore aquatic product resources are being destroyed in varying degrees, and they have put forward urgent proposals for the protection of inshore aquatic product resources. They have called upon all coastal areas to reduce the number of fishing boats, reduce quantity of catches and restrict intensity of fishing to give the resources opportunity to rest and recuperate in order

to help future development. A proper handling of the relationship between the interests of a part and the interests of the whole, and the interests of the present versus the interests of the distant future, as well as genuine intensification of government management of the fishing industry are guarantees for the continued development of the fishing industry. It is proposed that as of now a fairly scientific investigation be done of whether the various components of the inshore fishing industry have acted sensibly. This investigation should combine plans for reductions in the number of boats and the quantity of catches. During 1981, one commune should be selected as a test site in every coastal prefecture and a work team be organized consisting of representatives of the provincial bureau, local bureaus and of fishermen with participation by research institutes as well, for the purpose of making a concrete investigation and study of coordinated plans by the fishing industry, and additionally for the purpose of making satisfactory arrangements on the problem of the fishermens' future livelihoods with transfers, when necessary, to ocean hatcheries. Before 1985, the entire readjustment should be completed.

Second, vigorous development of the shrimp hatching industry. Everyone knows that prawns are a wonderful seafood, which command a high price in the international marketplace, with each ton selling for more than $3,000. Nevertheless, the quantity of prawn exports from Guangdong Province is not great. China's principal production area for export prawns is Bohai, but because of problems in preserving freshness and in transportation, the quality of these prawns is marred and the export price sharply reduced. If Guangdong could get a prawn hatching industry going with the product being sold directly in Hong Kong and Macao markets, a great amount of foreign exchange could be earned. The pertinent techniques for hatching prawns are substantially in hand. The South China Sea Aquatic Products Institute has been conducting experiments in prawn hatching at Zhanjiang and has had good results, with per mu yields of more than 700 jin from small areas (1.5 mu). Were nine special economic areas to set up prawn hatchery bases within the next 5 years, average per mu yields of 500 jin would be entirely attainable. Additionally, thorough investigation and planning should be done on varieties that have been hatched traditionally and on how to increase hatching in the shallow ocean and in harbors and bays.

Third, actively develop deep sea aquatic resources in the South China Sea. Deep ocean areas of the South China Sea where water depth is greater than 100 meters have a definite developmental value. During a survey made in 1978 and 1979, average per net catches of more than 600 kilograms were landed, and the highest catch was 8000 kilograms. The principal kinds of fish and crustaceans caught were deep water fish, including blunt headed dipterus, fatty eyed dipterus [0430 7345 2106 3189 5802], daoepi [0430 7345 2106] sea shrimp, Oriental spiral shrimp [5205 5802], and long legged red shrimp [7022 6398 4767 5802], all of which have definite food value. It is recommended that there be organized, first of all, high performance boats suited to deep sea operations, facilities for assisting fishermen,

and instruments to help with navigation in ocean areas deeper than 100 meters. State owned company boats should have priority in this equipment. In this way, full use can be made of deep ocean aquatic product resources, and fishing pressure on inshore areas can be lightened.

In summary, if we do comprehensive and sensible planning based on the realities as they exist in Guangdong's South China Sea fishing industry, making the most of advantages while avoiding disadvantages, we certainly will be able to transform the present state of the ocean fishing industry.

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PROVINCIAL GRAIN DEPARTMENT INVESTIGATES GRAIN, OIL PRICES

Guangzhou NANFANG RIBAO in Chinese 6 Aug 80 p 2

[Article by Li Zikang [2621 1311 1660]: "Provincial Grain Departments Investigate Grain and Oil Prices Throughout the Province To Strengthen Management Over Grain and Oil Prices and to Protect the Interests of the State and of the People"]

[Text] Throughout this year, Guangdong Provincial Grain Departments have been conducting a mass type investigation of management work on grain and oil prices throughout the province. This work has been launched in 1,231 grain management offices and in 1,912 grass roots grain shops, warehouses, processing plants and storage depots in 86 counties (or municipalities).

The investigations have found that an absolute majirity of grain departments handle matters strictly in accordance with state criteria for the processing of grain and oil, but there are individual places in which grain and oil do not attain the standards for quality set by the state. The grain contains a lot of grit, numerous unhusked grains, and extraneous material. A mincrity of grain departments have not regidly carried out the system for managing the prices of grain and oil. Wrong prices were constantly found. The investigation turned up 24,484 cases of wrong pricing throughout the province, and there were many instances in which the state was shorted on revenues or the masses paid too much. Incomplete statistics from the four prefectures of Foshan, Huiyang, Shantou, and Shaoguan show that the state received more than 13,600 yuan less that it should have, and the masses overpaid to the tune of more than 15,700 yuan. Throughout the province 8.16 percent of the 5,698 scales and measures used for selling grain and oil were found defective.

The Provincial Grain Department has called on grain departments in every jurisdiction to genuinely intensify management over grain and oil prices, and to strictly enforce discipline over grain and oil prices to prevent and to correct unauthorized price increases and disguised price increases in carrying out the unified grain and oil prices from higher authority. They should devote diligent attention to improvement of the quality of grain and oil products, treating this as an important task, and all grain and oil that does not meet the quality standards established by the state should not be allowed to leave the plant, should not be allowed to be transported, and should

not be allowed to be sold. Forces should be organized for a complete check of the various measuring devices currently in use, and those that have been damaged beyond repair should be retired from use at once so that full measure of grain and oil sold will be assured. Shortchanging should be investigated with prompt repayment to the masses in order to preserve the integrity of state-owned enterprises.

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GRAIN DEPARTMENTS STEP UP MIXED FEED PRODUCTION

Guangzhou NANFANG RIBAO in Chinese 3 Aug 80 p 2

[Article by Li Tzukang [2621 1311 1660]

[Text] Grain departments in Guangdong Province have been actively working on mixed feeds, and now 25 counties in 6 prefectures have begun this work. Last year they produced more than 32 million jin of mixed feed. Between January and May of this year, total production of mixed feed throughout the province was 20.12 million jin, a 44.23 percent increase over last year.

Mixed feed is a new variety of feed produced by the grain departments of Guangdong Province. Mixed feed consists principally of by-products from the processing of grain oil to which have been added some vitamins and minerals and protein according to the nutritional standards for varying growth periods in animals. These are compounded scientifically. Mixed feed is better than a single concentrated feed. On the basis of calculation of last year's production of 32 million jin of mixed feed, the province saved more than 6 million jin of concentrated feed. This was of great significance in changing the current feeding structure, in improving the feed utilization rate, in conserving grain, in lowering costs, in shortening the time required to fatten animals, and in promoting the modernization of the feed industry. During last year, Guangzhou municipal feed departments provided more than 10 million jin of mixed feed, virtually satisfying needs for the development of the animal raising industry in this city. Last year, Qingyuan County sold a total of more than 6.5 million jin of mixed feed, a two and one-half fold increase over 1978. According to a survey of some hog farms, hogs fed mixed feed showed a daily weight gain of 1.2 jin, and piglets kept in pens for 4 or 5 months grew to more than 180 jin. This is from 4 to 5 months less than is required for hogs fed on tongkang [a pig feed consisting of 40-70 percent hull meal and the remainder rice bran).

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WUCHUAN COUNTY PROMOTES JUTE GROWING

Guangzhou NANFANG RIBAO in Chinese 30 Jul 80 p 1

[Article by Huang Sizhui [7806 0934 6923]]

[Text] The campaign by Wuchuan County for initiation of scientific growing of jute has striven to popularize advanced jute growing techniques and scientific knowledge, and has vigorously promoted the development of jute production.

Throughout the county, jute output per unit of area has risen from 246 jin in the 1950's to 684 jin during the 1970's to become the national high yield county. Wuchuan County is the principal jute producing area of Guangdong Province. The dominant peasant variety that was formerly grown, "Wuchuan Danhongpi," had squat plants, flowered early, had a thin exterior and low output. Subsequently, the Jute Technology Promotion Station of Wuchuan County introduced the two fine varieties, "Xinyuan No 1" and Yueyuan No 5" from elsewhere, after which per mu yields of jute increased to more than 500 jin. Afterward, the Promotion Station each year organized the masses to purify and rejuvenate the "Yueyuan No 5" in order to make it the dominant variety throughout the county. In order to meet requirements for three crops a year, the Promotion Station's technicians began experiments in 1964 on the breeding of jute hybrids. After 6 years effort, they finally bred "401," a medium maturing, disease resistant, high yielding superior variety of jute, and popularized its planting throughout the county. Last year "401" superior variety jute obtained a provincial prize. The area planted to jute annually in Wuchuan County amounts to about 15 percent of the area planted to early rice. Jute cultivation was formerly concentrated in the sandy region of the Jianjiang Plain. But after many years of continuous cropping there, the jute fell prey to more and more diseases and insect pests, leading to a stunting of the plants, early withering, and low yields. In view of this situation, scientists and technicians at the Promotion Station went down into the jute growing area where they worked together with commune members to lower the water table, increase applications of organic fertilizer, and mix sand into the soil to change it. They were successful in growing jute in clay soil, thereby forging a new road in increased per unit output of jute in Wuchuan County.

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MANAGEMENT OF STORAGE FACILITIES IMPROVED

Guangzhou NANFANG RIBAO in Chinese 1 Aug 80 p 2

[Article by Feng Fenghe [7458 7364 0735] and Ceng Tao [2582 3447]]

[Text] The Fengshun County Commerce Bureau, which was last year designated an advanced unit in storage nationwide, has undertaken a prompt restructuring in light of new developments in warehouses to increase further the level of management of safe storage.

The Fengshun County Commerce Bureau has 24 warehouses, large and small, under its jurisdiction, with a storage area of more than 15,000 cubic meters and goods of more than 7,500 kinds. Amount of goods transported annually runs to more than 24,000 tons. As the varieties of goods handled has mounted, for a time some warehouses let the goods pile up in great disorder. They were uncertain of types of goods on hand; the warehouse utilization rate was not high; and some goods even molded. For this reason, the Commerce Bureau selected for restructuring those warehouses where the varieties of goods most frequently called for were stored, those in which there was frequent inward and outward movement of merchandise, and those containing stationery and knit goods. Utilization rate for most storage rose by from 20 to 30 percent; the error rate declined by 45 percent; the damage rate declined by 32 percent; and movement of goods in and out became more convenient with a rise in efficiency. The Commerce Bureau promptly promoted the experiences of these units elsewhere and organized warehouse management personnel from within the county system to participate in study. Furthermore, they organized all warehouse work teams under the leadership of leading cadres themselves to go to the Jiaohua Hardware Company warehouse, where work was in a backward state, to help out with an overall restructuring. After 20 days of effort, they changed the entire appearance of the warehouse.

Having made a thorough restructuring, the Commerce Bureau aroused the masses to perfect and formulate a warehouse management system that would be jointly respected. It has "10 bewares," and "10 do nots," plus specific requirements for "attractive display of merchandise, orderly stacking, management through a card system, and cleanliness and hygiene as a matter of routine" in a strict enforcement of a system of responsibility for safe management.

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BRIEFS

PEANUT, SOYBEAN PRODUCTION--Guangdong Province's rural villages have actively developed the economic crops, peanuts and soybeans. This year, more than 4.8 million mu of spring peanuts were planted throughout the province, an increase of 360,000 mu over last year. More than 1.3 million mu of soybeans were planted, an increase of more than 100,000 mu over last year. Widespread planting of peanuts and soybeans not only can increase the income of the collective economy and improve the livelihood of commune members, but by rotational cropping in wet and dry lands, it is an effective means for increasing soil fertility. The sandy region of the Pearl River Delta, which is crisscrossed with waterways, and where few peanuts have ever been grown, this year invested some land in the cultivation of peanuts. This both solved the farmer's difficulty locally in getting edible oil, and effectively nurtured the fertility of the soil [Text] [Guangzhou NANFANG RIBAO in Chinese 30 Jul 80 p 1] 9432

ZHANJIANG PREFECTURE GRAIN, OIL PROCUREMENT--The broad masses of rural cadres and commune members in Zhanjiang Prefecture have leaped to sell the state peanuts and oil. As of 24 July, the entire prefecture had completed ahead of schedule its total year's quota for sales of edible oil to the state, and edible oil in warehouses amounted to 12.42 million jin more than for the same period last year. Both the speed of putting oil into the warehouses and the good completion of quotas is such as has not been seen for the past 10 years. Zhanjiang Prefecture is a famous peanut producing area in Guangdong Province. This year the entire prefecture planted 1.07 million mu of spring peanuts, and thanks to a general establishment of a system of responsibility for production and the promotion of advanced techniques, both per unit output and total output of spring peanuts increased over the same period last year. In order to do a good job in state procurement of edible oil, this year every jurisdiction diligently simplified procedures for state procurement and placing oil in warehouses. Every echelon of grain departments also thought of ways to accomodate the masses, instituting acceptance upon arrival. [by Huang Shaocan [7806 4801 3503]] [Text] [Guangzhou NANFANG RIBAO in Chinese 3 Aug 80 p 1] 9432

HEYUAN COUNTY SOYBEAN HARVEST--Heyuan County had a bumper summer harvest of soybeans this year. The 25 rural communes throughout the county harvested a total of 47,353 dan of soybeans, an increase in output of 11,757 dan or 33 percent over last year, which was the highest output on record for the same period. [by Qin Hantang [8002 3352 1016]] [Text] [Guangzhou NANFANG RIBAO in Chinese 30 Jul 80 p 2] 9432

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BRIEFS

COTTON HARVEST--Shijiazhuang, 23 Sep--Hebei Province, one of China's major cotton-growing areas, reaped a rich cotton harvest this year. As of 20 September, the province had procured 68 million jin of new cotton, some 20 times the quantity procured in the corresponding period last year. This year, most of the province's 120,000 cotton-growing brigades have implemented the system of responsibilities in production and organized some 94,000 cotton-growing groups with 1.14 million people participating. In addition, some 250,000 cotton-growing technicians and able hands have been trained. [OW291341 Beijing XINHUA Domestic Service in Chinese 1143 GMT 23 Sep 80 OW]

CSO: 4007

CONFERENCE ON FARM MECHANIZATION, RECLAMATION HELD

SK301514 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 29 Sep 80

[Excerpts] According to our reporters (Wang Hongshi) and (Liu Baiying), the provincial work conference on agricultural mechanization and land reclamation was concluded in Harbin Municipality today. The conference noted that to develop farm mechanization in our province it is necessary to adhere to the principle of bringing the leaders' enthusiasm into play and advancing steadily.

Farm mechanization should first be carried out in the border areas, mountainous areas, wheat and soybean fields and in sowing, cultivation and transport and then in inland areas, plains, cereal croplands and in weeding and field crop harvesting operations. With the production brigades as the basic units, farm mechanization should be gradually achieved in the border areas and inland crop-producing areas in 2 to 3 years and in the mountainous and semi-mountainous areas in 3 to 4 years. In cereal crop-producing areas, brigades which are comparatively well off that primarily produce wheat and soybeans, and brigades with vast territories and sparse population, with many avenues for developing diversified economy, may speed up farm mechanization in a proper way. Other brigades should slow down their speed in carrying out farm mechanization and may achieve this target in a longer period of time. In the next 2 years, the main task is to sum up experience in carrying out experiments in selected units and to further expand the scope of these experiments. Proper attention should be given to the replenishment of urgently needed farm machines and the fulfillment of machine-sowing task. Management of the existing farm machines should be strengthened and their usefulness should be brought into full play so as to gradually achieve farm mechanization.

The conference also called for bringing into play our province's advantage in having much wasteland suitable for farming, reclamation in a planned manner and expanding the farming acreage. The conference noted: Our province plans to reclaim 25 million mu of land by 1985.

In reclamation areas we must reserve 10 percent of forest lands and 10 percent of pastoral lands for carrying out agriculture, animal husbandry and forestry to establish a better and more rational ecological balance. We must act in accordance with the demands of rational utilization of land resources, doing a good job in farm crops cultivation, developing animal husbandry, sideline occupations, fishery, industry and farmland capital construction and on mapping out plans for establishing new villages.

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BRIEFS

PADDY RICE--Hejiang Prefecture, Heilongjiang Province, reaped a rich harvest in its 608,000 mu of paddy fields. Average per mu yield is estimated at 500 jin and total output at about 300 million jin--15 percent higher than in 1979. [SK272320 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 25 Sep 80 SK]

PREFECTURE SHEEP BREEDING--With 16.6 million mu of grasslands and reed ponds, Nenjiang Prefecture in Heilongjiang Province is vigorously developing sheep raising. The number of sheep raised by both collectives and individuals has reached 1,002,000 by now. [SK272320 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 24 Sep 80 SK]

MILLET IMPORTANCE--Millet is an important grain crop in Heilongjiang. It is a crop which is used for both army provisions and as grain stockpiled for civilian use in case of war. The area planted to this crop is very large accounting for more than 18 percent of the total grain crop area. The yield and total output of millet directly affect the total output from Heilongjiang's grain crops. [Harbin HEILONGJIANG NONGYE KEXUE (Heilongjiang Agriculturel Sciences) No 1, 10 Jan 80 p 40]

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BRIEFS

SEED STRAINS--Zhengzhou, 29 Sep (XINHUA)--Seed companies have been set up in all counties in Henan and seed production and processing have gradually been specialized and mechanized in the province. Over the past 2 years, the county and municipal seed companies in Henan have produced over 300 million jin of fine seed strains of wheat, corn, cotton, peanut and sesame. At present fine wheat strains have been sown in 94 percent of Henan's wheat acreage and fine corn strains in 89 percent of the province's corn acreage. This year Henan has planted 9 million mu of cotton. [OW291253 Beijing XINHUA Domestic Service in Chinese 0221 GMT 29 Sep 80 OW]

CSO: 4007

HUNAN STRIVING FOR BUMPER COTTON HARVEST

Beijing RENMIN RIBAO in Chinese 27 Jul 80 p 1

[Article: "Cotton Pattern Readjusted and Production Leadership Beefed Up as Hunan Strives for Bumper Cotton Harvest This Year"]

[Text] Throughout the cotton producing areas of Hunan Province, every echelon of the party organization has taken steps to beef up leadership for cotton production and to organize the masses to do a good job of caring for the cotton fields. As of mid-July, most of the more than 2.5 million mu of cotton throughout the province was in bloom, and some carried bolls as it entered the hottest part of summer.

Following consultations with every prefecture this spring, the Hunan Provincial CCP Committee relocated the more than 300,000 mu of widely scattered cotton growing area to the Dongting Lake Plain. This, plus internal readjustments made by every prefecture, brought about an increase to 500,000 mu of the centralized cotton producing area. At the same time the province allocated 400 million jin of grain for adoption of the system of "linking cotton and grain," thereby solving the problem of grain for cotton farmers and making an approved reduction in the state procurement grain quotas for communes and brigades in cotton regions. This was closely followed by adoption by the Provincial CCP Committee and CCP committees at every level of the following several measures to strengthen leadership of production of cotton.

First, they adopted economic methods to manage production and to arouse the enthusiasm of cotton farmers. This year contracting for work down to the operating team linked with a system of responsibility for calculating remuneration for output was instituted in 30 percent of the cottonfields throughout the province. Sixty percent of the cottonfields instituted contracting for work down to the household and individual level, linking it with a system of responsibility for remuneration for output. This effectively overcame egalitarianism in the calculation of remuneration for labor, and aroused the enthusiasm of the cotton farmers to strive for a bumper cotton harvest.

Next, they gave strict attention to the training of cotton technicians in view of the weakness in technical forces in the new cotton regions following readjustment of the pattern of cotton cultivation.

Leadership cadres also penetrated into cotton growing areas to help solve new situations and new problems arising in cotton production.

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EXPERIENCES OF PRODUCTION BRIGADES COMPARED, STUDIED

Beijing RENMIN RIBAO in Chinese 28 Jul 80 p 2

[Text] Editor's Note: The method of comparative survey is a good way of understanding the actual conditions in depth. It is worthy of promoting

When there is comparison there may be discrimination. This is a principle we all understand well. When a poor brigade is studied to find out why it is poor, and when the condition of that poor brigade is analyzed, experience may undoubtedly be gained. When this brigade is compared with a poor brigade and a rich brigade with basically the same conditions, the superiority of the rich brigade may be more easily observed, while the shortcomings of the poor brigade may be treated with the needed measures. The poor brigade may be helped to absorb the experience of the rich brigade, to avoid the shortcomings and develop the advantages so as to turn poverty into riches. The study of Jianhu County to compare the conditions of 20 brigades produced several items of experience. This study is significant as a reference.

The level of distribution of rural commune members of Jianhu County, Jiangsu Province, reached an average of 120 yuan per person. The average net income per person of 64 production brigades exceeded 200 yuan, but there were still 220 production brigades of which the net income per person was under 80 yuan, and 27 brigades of which the net income per person was less than 60 yuan.

Why is it that the incomes of the rich brigades and the poor brigades had that great a difference? What can be done to help the poor brigades become wealthy quickly? The county selected 2 brigades from each of the 10 communes that have basically the same conditions but different income levels to carry out a comparative study. All 20 production brigades being studied cultivate primarily grains. On the average, each workers plants 3 to 4 mu of fields. In the past, the production and distribution levels were all relatively low.

The speed of development in the last several years has been very different, however, The conditions of these brigades in 1979 are compared as follows:

The grain yield of the better brigades averaged 1,500 jin per mu, cotton yield was 149 jin, and each worker's average production was 5,800 jin of grains. In the poor brigades, the grain yield was 1,200 jin per mu, cotton 88 jin, and the production of each worker averaged 3,700 jin of grains, amounting to 64 percent that of a worker in the richer brigades. The net income from the better brigades was 77,000 yuan, averaging 37 yuan per person; that of the poorer brigades was 16,000 yuan, averaging only 9 yuan per person, and amounting to only one-fourth that of the richer brigades. The production expenditure of the richer brigades amounted to 32 percent of total income, that of the poorer brigades 51 percent. The distributed income of the richer brigades was 198 yuan per person on the average, and that of the poorer brigades was only 68 yuan.

The reason for this condition was the fact that the richer and the poorer brigades did not work the same way.

(1) The understanding and implementation of the policy of pursuing grains as the mainstay and aiming at total development are different. The Tangdun Brigade of Xinzhuang Commune insisted upon growing grains and cotton and trying to earn money at the same time; gradually nine auxiliary industries were started. The average distributed income per person for 1979 was 207 yuan. The Yaojin Brigade of Qingfeng Commune looked upon auxiliary industry as a bother and thought "if a family has two careers, one has to be neglected"; therefore, the brigade grew only grains. After the leaders urged the members repeatedly, they began to raise 4 sows and 80 ducks in 1979. At the distribution time, even when the agricultural tax was exempted, the average income per person was only 51 yuan. The brigade owed the state 13,000 yuan. Now the cadres of the brigade began to see "if a family has many careers, it will be financially prosperous."

(2) The principle of rewards according to the work is not enforced the same way. The better brigades had insisted upon quantitative management. The work was evaluated and points recorded. Some of these also practiced a fixed awards and penalties system of responsibility with regard to cotton and auxiliary production.

(3) The economic accounting work is not carried out the same way. Whenever the Xinmin Brigade of Jinhu Commune planned to start an auxiliary industry, the needs of the state and the market conditions were studied first, before calculating the income and the cost. The project was launched only if it was known to be feasible. It must earn a profit and it must not lose money. The Yunhe Fifth Brigade of Gangdong Commune did not think about economic benefits. They did not have a standard for feeding the pigs. Their income from raising pigs was very little.

(4) The condition of the leadership was not the same. In relatively better brigades, the leaders are relatively united and stable. The cadres conduct the business fairly, and are positive and willing to work. They have rich experience and know how and what to think.

After investigation and comparison, Jianhu County understood the disease of the poor brigades and began to prescribe the right drugs. The poor brigades were helped to adjust their leadership staff and their production policy. The policy of distribution according to labor is implemented and various systems of responsibility established. Their economic accounting was improved, and at the same time related departments are organized to provide the necessary support in materials, finances, and techniques.

6168
CSO: 4007

BRIEFS

RAPE SEEDLING CULTIVATION--As of 18 September, Jiangsu had grown rape seedlings on 500,000 mu, an increase by 190,000 mu over the corresponding period of last year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 20 Sep 80 OW]

COLD SPELL--Jiangsu Province this year had a cold spring and a cool summer and even in mid-September, temperatures remained below 20 degrees centigrade. This affects the growth of late rice throughout the province. Provincial departments concerned have called on all localities to take appropriate measures to protect late rice particularly during the current heading and flowering period. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 22 Sep 80 OW]

AGRICULTURAL ZONING--Nanjing, 23 Sep--Jiangsu has made new progress in natural agricultural resources investigation and agricultural zoning. The first draft of the "Consolidated Report on Jiangsu's Agricultural Zoning" has recently been completed, thereby providing a scientific basis for formulating long-term agricultural production plans and serving as a guide for current agricultural production. It has also offered many rational suggestions in agricultural production and answered many new problems in agricultural development. [Beijing XINHUA Domestic Service in Chinese 0234 GMT 23 Sep 80 OW]

CSO: 4007

BRIEFS

AUTUMN DISTRIBUTION--The Jianping County CCP Committee, Liaoning Province, decided to make good on its autumn distribution promises despite crop failures. Due to crop failures resulting from natural disasters, farm output dropped significantly this year. However, in order to win over the peasants' confidence in party's policies and make due arrangements for commune members' livelihood, Jianping County decided to increase the amount of the income to be shared among commune members so they can receive more income. [SK021135 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 29 Sep 80 SK]

HAILSTORMS--Hailstorms hit the eastern part of Fu County, Liaoning Province, on the afternoon of 27 September. More than 600 production teams and 130,000 mu of crops were affected. Sorghum, soybeans and vegetables were seriously affected. [SK021135 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 29 Sep 80 SK]

CSO: 4007

BRIEFS

GRAIN PROCUREMENT--Now is the time for communes and brigades throughout Qinghai Province to hand over purchasing grain to the state. The grain storage section of the provincial grain office called on various grass-roots grain stations to carefully examine the quality of grain and rationally grade it according to its quality while putting it in storage. It is not permitted to presumptuously upgrade or downgrade the grain and raise or reduce grain prices. [Xining Qinghai Provincial Service in Mandarin 2330 GMT 24 Sep 80 SK]

CSO: 4007

COMMUNE MEMBERS GIVEN WASTELAND FOR CULTIVATION

Jinan DAZHONG RIBAO in Chinese 18 Jul 80 p 1

[Article by Ban Gongsi [3803 1362 2448] and Li Zunli [2621 6690 4539]: "'Three Wastelands' Presented as a Treasure in Policy Implementation; Liaocheng Prefecture Apportions 500,000 Mu of Sandy and Saline Wasteland and Wasteland in Rural Villages to Commune Members for Cultivation"]

[Text] Every county in Liaocheng Prefecture has conscientiously implemented policies in support of production team apportionment to commune members of "three wastelands" for reclamation and cultivation. The total amount of "three wastelands" throughout the prefecture that is being reclaimed and put to use amounts to 507,000 mu. After being carefully tended by commune members, the growth shown by various crops on these lands is heartening.

In quite a few places in this prefecture, particularly in some less advanced communes and brigades, there is a lot of sandy, alkaline, and village wastelands, which have for many years laid uncultivated and providing no crops. This year, the Liaocheng Prefectural CCP Committee diligently summarized the experiences of some communes and brigades following the Third Plenary Session of the 11th Party Central Committee in giving "three wastelands" to commune members for cultivation, and recognized that this was a major measure for hastening agricultural development throughout the prefecture as well as a good deed that benefited the state, the people, and the collective. They thereupon studied and decided on distribution in an organized and planned way of the "three wastelands" to commune members for cultivation. In order to understand this issue, each county sent out a group of cadres to go down into the production teams with the special purpose of taking in hand the implementation of this work. The amount of "three wastelands" currently being reclaimed and put to use amounts to 76 percent of the total area of "three wastelands" in the prefecture, or the equivalent of 10 percent of the collective grain field area of the whole prefecture.

The methods used to administer the "three wastelands" are as follows: One is low prescribed production with an award to the tiller of all

production in excess of the amount prescribed. A second is low prescribed production, with apportionment to the tiller of a proportion of the amount in excess of that prescribed. Third is collective recording of output with earnings reverting to commune members. Fourth is farming done by commune members with the collective purchasing the output at a price and the cash income going to itself. Fifth is a system of income going to the tiller in which all income from output goes to commune members. Sixth is collective unified planting of trees to create forests which are apportioned to commune members to be cared for with teams and households sharing.

In order to allay apprehensions on the part of commune members that the "three wastelands" being cultivated might be taken back, resulting in an unwillingness to put work or fertilizer into it, some communes and brigades concluded concrete agreements guaranteeing no change for periods of 3 years, 5 years, or longer, so that the commune members need not worry.

9432
CSO: 4007

PRODUCTION RESUMED IN 14 FERTILIZER PLANTS

Jinan DAZHONG RIBAO in Chinese 17 Aug 80 p 1

[Article: "Fourteen Nitrogenous Fertilizer Plants in Shandong Province Resume Production After Success in Reducing Consumption, Making Up Deficits and Increasing Surpluses Following Stoppage of Production for Restructuring"]

[Excerpts] Last November, following joint notification by the Shandong Economic Committee and five departments, 21 small nitrogenous fertilizer plants with high consumption and large losses halted production for restructuring. After more than half a year, 14 of the plants had resumed production one after another as of 15 August following checking and acceptance. It appears on the basis of the situation during the several months since resumption of production that they have substantially reversed their former backward conditions of high consumption and large losses. As compared with the same period last year, synthetic ammonia production increased by 37 percent. Consumption of coal per ton of ammonia produced declined by 27 percent, electric power consumption declined by 19 percent, and losses were reduced by 2.93 million yuan.

Three of the plants showed profits without any subsidization at all; seven showed profits with subsidization, and three had loss figures that were 59.1 percent lower than for the same period last year. At the Jining County Chemical Fertilizer Plant where results of restructuring were best, cost of production of each ton of synthetic ammonia declined from 874 yuan prior to restructuring to 458 yuan.

At the Weishan Chemical Fertilizer Plant, prior to restructuring, discipline was lax, operations were in disarray, and accidents resulting from negligence were numerous, so much so that average monthly losses last year amounted to 100,000 yuan. Following a halt to production and restructuring, they itensified education in discipline, and perfected various rules and regulations so that production rapidly made a turn for the better. As consumption of coal and electricity decreased, costs per ton of chemical fertilizer produced fell by 181 yuan over what they had been prior to restructuring. Between March and June of this year, profits for the entire plant amounted to 290,000 yuan.

9432
CSO: 4007

BETTER MANAGEMENT OF TRACTOR STATIONS URGED

Conference Studies Problem

Jinan DAZHONG RIBAO in Chinese 26 Aug 80 p 1

[Article: "Strive for Good Management of Commune Tractor Stations. Province-wide Commune Operated Tractor Station Administration and Management Work Conference Stresses Making the Most of Special Advantages, Liberalization of Policies, and Increased Economic Benefits"]

[Text] How can commune operated tractor stations best be managed to promote the growth of commune operated collective farm machinery enterprises? This is a management question for commune operated tractor stations that is currently in urgent need of solution. The Province-wide Commune Operated Tractor Station Administration and Management Work Conference held from 18 to 22 August in Ye County undertook a conscientious study of this problem, proposing that agriculture be paramount, that avenues be broadened, that special advantages be put to use, that policies should be liberalized, and that efforts be made to increase economic benefits.

Delegates have reported that in recent years, as a result of the large increase in tractors in brigades and production teams, and as a result of the large increase in tractors in brigades and production teams, and as a result of the development of transportation vehicles and the institution of systems of responsibility for production of various kinds in rural villages, a decline has taken place in the volume of operations of commune operated tractor stations; costs have risen; and losses have increased. Unless these problems are solved promptly, the progress of modernized construction of agriculture will be impaired. Therefore, the conference used the classical briefings on experiences and forum discussions to study some effective measures for good management of commune operated tractor stations.

The conference felt that the principle of tractor stations for agricultural use should be paramount, but that there should be a gradual increase in the scope of operations and an active marching toward the mechanization of agriculture, forestry, livestock raising, sideline occupations, and

fisheries. If tractors were to be confined to operations in croplands, they would become "idle half the year," whereas were they to be put into service for industrial sideline occupations and numerous other activities of communes and production brigades, the quantity of their operations would increase scores of times, and earnings might also increase remarkably. It is necessary, therefore, to devote attention to the development and production of farm machines and tools that can be attached to tractors to make a reality of one machine with multiple hitches and one machine with multiple uses. Commune operated tractor stations have large farm-machines, and they possess certain maintenance and repair facilities and technicians, which can be used in transportation and for maintenance and repair, for the renovation and improvement of farm machines and tools, for technical training, for the supply of spare parts, and for the development of operations of various kinds. It is necessary, in addition, to liberalize government policies to permit tractor stations to actively engage in operations without violation of national policies or laws that help develop agricultural mechanization and help expand further production by business enterprises so that collective farm machinery enterprises operated by communes will be better and better run.

The conference felt that the most important matter at the present time in the operation of commune run tractor stations is a need to combine restructuring of tractor stations with close attention to the establishment and perfection of various rules and regulations, vigorous promotion of accounting for individual vehicles, and a system of "five fixeds and a single reward or punishment," so that profits or losses and the good or bad management of a tractor station will be intimately connected to the personal material welfare of employees and so that the broad masses of employees will take the initiative in offering advice and suggestions to make the commune operated tractor stations be run even better.

The conference also made arrangements on the problem of farm machinery during the period of the "three autumn jobs" [harvesting, plowing, and sowing].

Suggestions for Improvement

Jinan DAZHONG RIBAO in Chinese 26 Aug 80 p 1

[Article: "The Key Lies in Improvement of Management"]

[Text] Commune operated tractor stations are gradually becoming a mainstay in the mechanization of agriculture. Every jurisdiction should effectively strengthen management to do a good job of managing commune operated tractor stations in just the same way that other business enterprises are run.

Most of the 2,113 commune operated tractor stations throughout Shangdong Province are well run. Basically they all have a management system, outlets for production, high operating efficiency, low levels of consumption and waste, and surplus from their business. But there are some commune operated tractor stations in which management is chaotic and which have remained for a long time in a passive situation of losses. Some have not even been able to pay wages to their employees, and some individual stations have closed their doors, locked up their vehicles, and have ceased operations. Such situations require adoption of effective measures to find real solutions to the problems. Active management of these commune operated tractor stations can make these mainstays of agricultural mechanization develop steadily.

Looked at in terms of the experience of well run commune operated tractor stations, the selection of management enterprises well versed in farm machinery is extremely important. One of the main reasons that some places have had losses for a long period of time is that greenhorns are running the stations. They lack dedication in the management of farm machines and their drive also leaves something to be desired, so some of the problems existing in the tractor stations have not been amenable to solution for a long time. Therefore, in the restructuring of commune operated tractor stations, we must certainly face the facts and select for positions of leadership those persons who understand technology and are able to manage in order to solve effectively the leadership group problem. If this is done, a good job of running the tractor stations can be assured.

Commune operated tractor stations should institute independent management, independent accounting, and a gradual expansion in the autonomy of the enterprise. Right now the autonomy accorded some commune operated tractor stations is too little. Manpower and financial and material resources must all come under the direction of the commune. In some cases, even vehicles and funds belonging to tractor stations are transferred at will in an egalitarian and indiscriminate way, thereby seriously dampening the enthusiasm of the workers. This is also the principal reason for losses by commune operated tractor stations. In this regard, the commune leaders must take the lead in carrying out the stipulated requirements of higher authority relating to good management of commune enterprises, and they should be given a reasonable amount of autonomy to do so. For example, tractor stations should be permitted authority to arrange their own farmland operations and various enterprises on the basis of the state of their own manpower, financial, and material resources; they should have authority over the selective recruitment of workers and the institution of rewards and punishments; they should have authority to use profits to expand further production by enterprises and to improve the living conditions of employees; and they should have authority to resist egalitarian and indiscriminate transfers, so as to arouse the enthusiasm and creativity of the employees.

Commune operated tractor stations should establish and perfect rules and regulations of various kinds and adopt necessary measures for economic rewards and punishments. It must be realized that quite a few tractor stations are still "eating out of a common pot" as far as management is concerned, making impossible the realization of "the more the work the greater the gain." The best way to resolve such tendencies toward egalitarianism is to promote a system of accounting for each vehicle and the "five fixeds and single reward or punishment" system of responsibility, so that employees can gain greater real benefits from the good operation of tractor stations. Wherever this has been done, outstanding economic benefits have been reaped. Tractor station cadres should make the difficult effort of learning management, and strive to do management work in a meticulous yet flexible way in order to create the conditions for the realization in their enterprises of high efficiency, low consumption, increased income, and surplus profits.

9432
CSO: 4007

BRIEFS

HYBRID TOBACCO PLANTS--Jinan, 28 Sep (XINHUA)--Scientists in east China have successfully bred hybrid tobacco plants this year by fusing the protoplasts of leaf cells of two varieties of tobacco. This is the first such successful experiment in China. Since it is difficult to cross two distantly related crop varieties or species by the conventional methods of pollination, scientists hope to achieve this by somatic hybridization, i.e., by cell fusion. Scientists of the Tobacco Research Institute in Shandong Province isolated protoplasts from the leave cells of two distantly related varieties of tobacco and then made them fuse with the aid of an agent. After a month's culture, the fusion bodies divided and grew into calluses and the scientists developed plants from them. Now the hybrid plants have grown to between 1 meter and 1.5 meters high in the greenhouse of the institute. Some of them have blossomed and born seeds. [Text] [Beijing XINHUA in English 0718 GMT 28 Sep 80 OW]

CSO: 4020

COMMENTATOR'S ARTICLE ON AUTUMN HARVEST

Chengdu SICHUAN RIBAO in Chinese 26 Jul 80 p 1

[Article by Commentator: "Strive For a Big Bumper Autumn Harvest"]

[Text] Sichuan's major spring-sown crops are now growing well; the area planted to fine varieties of crops of all kikds has been enlarged; and the quality of farming has also improved. In the case of intermediate rice, where the potential for increased output is very great, the area planted has been especially enlarged by more than 1 million mu over last year, and this is extremely helpful in realizing a bumper autumn harvest this year. However, as a result of a shrinking of the area planted to wheat, output of minor spring-sown crops throughout the province this year has not fulfilled plan. Consequently, getting increased yields from major spring-sown grain crops is a more strenuous and more arduous tasks. Furthermore, except for edible oil, increased output from economic crops will also depend primarily on major spring-sown crops for fulfillment of quotas. Major spring-sown crops will decide whether or not plans for increased yields in agriculture will materialize this year. As far as major spring-sown crops themselves are concerned, in many prefectures the planting season for major spring-sown crops was delayed as a result of the weather, and natural calamities occured in some prefectures. Further natural disasters may yet occur in some prefectures. This requires that we maintain a high degree of vigilance, and under no circumstances slacken efforts, lower our guard, or become blindly optimistic. Instead we should fully realize the arduous nature of the work, be adept at using favorable conditions, overcome unfavorable factors, pay strict attentinn from now until the autumn harvest is in, go all out in mobilizing the masses, take more action, and use every manner of means to get a large bumper autumn harvest and guarantee fulfillment of increased output quotas in agriculture for the entire year.

Fullest use must be made of the intervening time between harvest of the spring-sown crops and the sowing of minor spring-sown crops, adapting methods to local conditions to rush plant late autumn crops so as to increase, to the maximum extent possible, output of grain, tubers, and

vegetables. Planting of late autumn crops is an important method of increasing output that takes advantage of the special natural advantage of Sichuan Province. Every jurisdiction should be prompt in arousing the masses to adapt methods to local conditions in fulfillment of late autumn crop planting plans, to make effective arrangements for the planting of seedlings and application of fertilizer, and for keeping pace with the seasons to do a good job of planting and a good job of care.

9432
CSO: 4007

AGRICULTURAL RAW MATERIAL BASES STRENGTHENED IN SICHUAN

Beijing RENMIN RIBAO in Chinese 12 Aug 80 p 2

[Article by correspondent Li Shaoyi [2621 4801 0122]: "Sichuan Intensifies Building of Agricultural Raw Materials Bases; Puts Development of Light Industry on Sound Foundation"]

[Text] Light industrial units in Sichuan Province have bent great efforts to intensify the building of agricultural raw materials bases, closely linking raw materials production with processing, to put intensive light industry development on a sound footing.

Currently, light industries in Sichuan Province that are dependent on the products of agricultural sideline industries have built and enlarged a group of raw materials bases and centralized supply areas for raw materials to form a rudimentary raw materials supply system. Twenty-six mechanized sugar refineries form a processing center for the system. Included are the 800,000 mu cane sugar materials bases in the four large cane prefectures of Neijiang, Yibin, Jiangjin, and Leshan. Eight major export canning plants also form a processing center comprising canned goods raw materials bases for a total of 10 kinds of vegetables and fruits. In addition, there are 13 lue-cured tobacco raw materials base counties of the cigarette industry plus bamboo, wood, palm, rattan, straw, and perfume industrial raw materials bases for the manufacture of paper and daily necessities.

In Sichuan today, products using agricultural raw materials in their manufacture account for a very large proportion of the total products of light industry. The total output value and profits and revenues turned over to the state by the four major light industries, sugar refining, canning, cigarette making, and paper making amounted to 52 and 70 percent respectively of that provided by light industry throughout the province. In order to increase light industry with all possible speed, Sichuan Province has made the establishment of agricultural materials bases a major instrument for the development of light industry.

Light industrial units in Sichuan Province are making fullest use of resources in the province. They are selectively choosing key industries for the development of raw materials production so that the raw materials production of these industries will be geared to processing and be mutually reinforcing in making the most of their own special advantages. From 1977 until the present, the sugar refining industry in this province has given special attention to sugarcane production. While consolidating development of old cane areas, they have actively built new cane areas. Large-scale increases in sugarcane have taken place throughout the province year after year for the past 3 years, and sugar production has increased an average 54 percent each year. Faced with a new situation in which the "can't get enough" of the past has given way to "too much to handle" in the sugar refining industry, light industrial units in Sichuan Province began last year to give serious attention to new increases in sugar refining capacity. In nine refineries they instituted technical improvements to increase their daily sugarcane pressing capacity to 3,000 tons, which increased the production of white sugar by 30,000 tons in a single pressing season. Output value amounted to 33.6 million yuan, and accumulations increased by more than 13 million yuan.

In their intensification of construction of agricultural raw materials bases, light industrial units in Sichuan Province have taken a practical approach adapting methods to local cirsumstances, the season, and the varieties of raw materials, and adopting diverse methods. The principal of these have been: 1) comprehensive planning for key raw materials bases and raw materials areas under the guidance of the state plan; 2) in the case of agricultural sideline industry raw materials that are large in quantity but scattered, as for example bamboo, rain cape straw, and rice and wheat straw, designation of plants according to their location so as to link production and marketing in accordance with circulation channels in the economy, and organizing the production and supply of raw materials; 3) linking industry and agriculture with plants and communes to study and formulate plans jointly, with both sides signing contracts for the development of raw materials production in accordance with the needs of industry for kinds, quantity, quality, and time of entry into the plant of raw materials. Results have been particularly outstanding in the case of light industries where seasonality is strong, processing time pressing, and where organization of balanced production is necessary.

Intensification of the construction of raw materials bases for light industry and the development of raw materials production depends principally on government policies. In organizing the production and supply of agricultural raw materials, Sichuan Province has diligently implemented the party's various economic policies for rural villages, with particularly strict implementation of policies pertaining to grain, prices, award sales, and returns pertaining to the development and state procurement of the various kinds of economic crops and agricultural sideline products. Every light

industry has concurrently vigorously strengthened technical guidance and material support to agricultural raw materials bases, has helped communes and brigades train a corps of scientists and technicians, and has instituted scientific farming. Industrial units engaged in canning and sugar refining have released a certain proportion of their own total expenditures for raw materials for use as expenditures for the technical improvement of raw materials.

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CSO: 4007

SYSTEM OF AGRICULTURAL RESEARCH CONTRACTS PROMOTED

Chengdu SICHUAN RIBAO in Chinese 1 Aug 80 p 2

[Text] The Xichong County Science Committee earnestly promoted the system of scientific research contracts to clarify the responsibility and to be fair in awards and penalties. The departments requesting research items and units accepting the projects are urged to proceed according to contracts seriously, and the results have been good.

In the past, the items of agricultural research of Xichong County were handed down by the county science committee to the production brigade to be carried out. Both sides had no clear understanding regarding the economic and technical responsibilities. There was no compensation for scientific research expenditure. Whether the research studies were well done or not very well done, it was all the same. It often happened that money was spent but the job was not done. For the purpose of changing this situation, the county science committee decided to carry out the contract system for 6 of the 10 research items which the province, the district, and the county have ordered this year. In early May, those in charge at the county science committee led technical personnel to the units that are to take on the key projects to carry out repeated negotiations, to agree upon the concrete contents of research contracts and to determine the method of awards and penalties. The contracts stipulate the technical details of the project, the needed research expenditure, the technicians to participate in the experiments, and the time to complete the research project. A compensation system for the research expenditure is practiced. If the project is completed as planned, the payment for the expenditure does not have to be refunded and may be used as an award. If only 70 to 90 percent of the project is completed, 40 to 20 percent of the payment is to be refunded, respectively. If the research is not carried out according to specifications, or if the experiment fails due to human error, 60 to 80 percent of the payment is to be refunded according to the condition as a penalty. During the process of the experiment, inspections and evaluations are to be carried out at various key technical segments, and prizes are to be awarded to those who carry out the plan well. The contract also stipulates that the project implementation design is to be proposed by the county science committee, which is also responsible for technical training, timely dispensation of funds, and

assistance in resolving some concrete problems. If the research project fails as a result of failure to carry out the contract on the part of the committee, it would be the responsibility of the committee. The contract is signed under the supervision of the local party committee which is to enforce compliance from both sides. After the contract is signed, the research department and the unit that takes on the project are both controlled by the contract and must conscientiously carry out the terms of the contract. In the middle of May, the county science committee signed contracts with the 3 production teams of the 1st, and 2nd, and the 13th of the 1st brigade of Qingshi Commune to carry out "doubling the output target" yield per mu of hybrid rice in 100 mu of fields. Soon after the contracts were signed, technicians were sent to the production teams to provide technical guidance in such key links as seedling culture in greenhouses, seedling tillering, and transplanting in fields, etc. These three production teams also carried out the technical design strictly according to the contracts to practice the new technique of cultivating seedlings in two stages to grow strong tillers. Timely early planting was also carried out to grow a sufficient number of basic seedlings. A few days after transplanting was finished, the county science committee organized related communes and brigades to go to every one of the experimental fields to inspect, evaluate, and compare. An award of 40 yuan was handed out to the unit and the individual who carried out the plan well.

6168
CSO: 4007

DEVELOPMENT OF ECONOMIC FORESTS URGED

Chengdu SICHUAN RIBAO in Chinese 14 Jul 80 p 2

[Article by Xie Zijun [6200 5261 0971]: "Make the Most of Special Natural Advantages; Strive to Develop Economic Forests—A Major Way To Change the Face of the Rural Economy in Mountain Regions and Hills"]

[Excerpts] Sichuan Province has extremely abundant economic forest resources with tree varieties numbering several hundred. In 1979, output value of production was almost 1 billion yuan. In output of silkworm mulberry, tung insect wax, and citrus, it stands first in the country, and in output of Chinese tallow, it stands second.

However, development of economic forests in Sichuan Province, like development of the entire forestry industry, is a notoriously weak link in the present economic structure of agriculture. Adverse effects in terms of the national plan and the livelihood of the people is quite great. In terms of the large number of forestry by-products that are famous in both domestic and foreign markets, except for silkworm mulberry, tea leaves, and citrus for which an increase in output has occured, most other products have not revived annual output to the highest levels ever recorded, and the extent of decline of some has been very great. Tung trees, for example, have been the woody plant source of industrial oil that is a specialty of China where they have been grown for more than 1000 years. Tung nuts have a oil content from between 65 and 70 percent, and tung oil has the special properties of quick drynng, glossiness, non-conductivity of electricity, resistance to cold and heat, resistance to dampness, and protection against decomposition and rust. There are 2000 articles produced by modern industry in which tung oil is a raw material. China exports 80 percent of the tung oil in the international marketplace, and Sichuan Province is the major tung producing region of China with an output of 40 percent of the national total. However, economic forests that occupy such a major position in the national economy have suffered a large amount of damage. In 1979, total output of tung seed for all of Sichuan was 2.67 million dan, but output in 1955, which was the highest year of record, amounted to more than 4.28 million dan. In 1979, total value of state purchases of

agricultural sideline products in Sichuan Province showed an increase of almost 30 percent over 1978. In the 3 years following the smashing of the "gang of four," the net increase in total value of agricultural by-products purchased by the state in Sichuan Province was greater even than the increase in total value during the 20 years from 1956 to 1976. Never the less, despite such large increased output and development of agriculture, the quantity of purchases of large numbers of economic forest products continued lower than during the highest years recorded. In a comparison of 1979 quantity of purchases with the highest recorded levels, tung declined 37 percent; Chinese insect wax declined 27 percent; raw lacquer declined 28.3 percent; southern bamboo declined 33 percent; coir fiber declined 46 percent; wood fungus declined 79.6 percent; output of tea oil declined 27.7 percent, and output of rosin declined 33.8 percent.

There were numerous reasons for the great decline in economic forest products. One was that during a 3 year period of difficulties, a large number of the economic forest resources were cut down, and they continue to suffer destruction throughout the period of the Great Cultural Revolution. Another reason was impairment caused by the mentality of a single product economy, which caused destruction of forests to grow grain and squeezed out forest resources. A third reason was the suspension, for a time, of the policy of award sales plus a lowering of purchases prices, and a lack of funds needed for the development and support of production, which dampened the enthusiasm of the masses. A fourth reason was a shortage of technical cadres so that research work became a weaker link. These circumstances revealed the weakness of the economic structure of Sichuan's agriculture. Proportional imbalance in the economic structure of agriculture has become a serious impediment to the further development of the rural economies of Sichuan Province. Without serious attention to the development of economic forests, fullest utilization of the abundant natural resources is not possible, and poor mountains cannot be transformed into precious mountains. This is the major reason that the countenance of rural village economies in the mountain regions and hills of Sichuan Province cannot be rapidly transformed. A shortage of economic forest products also seriously impairs the supply of industrial raw materials, exports and foreign trade, market supply and things the people need in their daily lives. One example is the famous wood fungus from Sichuan, which is both of use in protecting the health of those who work in a dust environment [7089 1057 0525 0202] and a tasty ingredient in fish and meat dishes, but which was unavialable in markets for a long time as a result of a decline in output of nearly 80 percent. Rosin is an important raw material in the manufacture of paper and soap, and Sichuan Province requires about 8000 tons of it annually, but annual output is now only 2000 or 3000 tons, and we must depend on other provinces for it. As a result, there has been a shortage of paper and soap for a long time.

The reason we so vigorously emphasize development of economic forests is not just because this is a glaringly weak link in the current agricultural

economy of Sichuan Province, which problem should be properly solved during the process of readjustment, but because in the development of economic forests in our province, which has remarkable natural advantages, our coming to real grips with this problem in the course of readjustments to the internal structure of agriculuure, can play a major role and open vast vistas in enlivening the agricultural economy and fully developing agricultural production.

9432
CSO: 4007

BRIEFS

AGRICULTURAL NEWS--Urunqi, 26 Sep (XINHUA)--Xinjiang Uygur Autonomous Region in northwest China has had another good harvest of oil-bearing crops this year. The total yield was 142,500 tons, an increase of 1,250 tons over last year. Xinjiang has developed a new breed of cattle both for milk and meat by crossbreeding a local breed with an imported one. The crossbred cattle are adapted to high mountain pastures and can weather bitter winter cold. Such cattle now number 20,000 head. Xinjiang, one of the major pastoral areas in China, has added 400,000 hectares for growing forage. In addition, it has built projects to irrigate 160,000 hectares of grassland and improved another 120,000 hectares. [Text] [OW291351 Beijing XINHUA in English 0815 GMT 26 Sep 80 OW]

CSO: 4020

BRIEFS

COCOON PURCHASE--Zhejiang Province has purchased approximately 758,000 dan of summer cocoons, an increase of more than 100,000 dan over the corresponding period of 1979. Establishment of specialized teams and timely introduction of scientific methods raised the output of silkworm cocoons and mulberry leaves. [OW291235 Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 25 Sep 80 OW]

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I. GENERAL INFORMATION

RENMIN RIBAO' URGES LAND IMPROVEMENT IN MOUNTAIN AREAS

HK070236 Beijing RENMIN RIBAO in Chinese 29 Sep 80 p 2

[Article by commentator: "Speed up Development of the Mountain Areas, Carry Out Comprehensive Harnessing of Water, Soil and Forests"]

[Text] The report on the survey of the Taihang Mountains is worth reading citing vivid facts, it shows that we must act according to objective laws when harnessing barren hills and implement the policy of comprehensive harnessing of water, soil and forests. This is a key issue in mountain area construction.

There are vast mountain regions in our country. Over a long period of time, some places cut trees indiscriminately, and destroyed the forests and grasslands for the cultivation of crops because they did not recognize the importance of conservation and vegetation. The green hills and clear waters of the past are now barren hills, while soil erosion is very serious. This not only makes the mountain peasants suffer but also affects agricultural production on the plains. We must genuinely learn a lesson from this, enhance our understanding and correct the past erroneous practices.

Suiting measures to the local situation is the basic principle of agricultural production. Production in mountain areas is no exception. Facts have proven that it is unsuitable for the mountain areas to take grain as the key link. Instead, we should base our work on the different characteristics of large mountain areas, semi-mountainous areas and hilly areas, seek truth from facts and set different key links for production. We must either give priority to forestry, or integrate forestry with animal husbandry, or forestry with grain, and promote diversified undertakings. In Xingtai County's remote mountain areas, at first they planted whatever trees were available and the survival rate was quite low. Later, they changed to planting saplings suited to local conditions, and the survival rate was thus raised. However, the short-term benefit was not great. Considering the economic effects, they also planted some fruit trees of relatively high economic value, twigs of the chaste tree and wild jujube, which yield fruit in the same year. By proceeding from the actual situation, and integrating the long-term with the short and using the latter to promote the former, better economic effects were scored.

To harness barren hills, we must carry out comprehensive harnessing of water, soil and forests. The gullies in the remote mountain areas of Xingtai County were harnessed by digging ditches and harnessing slopes at the same time. On the one hand, numerous trees were planted and forests cultivated; on the other hand, many small ponds were dug on the mountain slopes for holding water. Many level ditches, dykes and embarkments were constructed. By doing this, they have basically achieved "holding flood water within the ditches, and preventing the soil from falling down the slopes." To transform nature, construction and biological measures must be closely integrated. We can make use of the construction projects like reservoirs, embarkments, ditches and pumping stations to block, retain, divert, raise, dispatch and transport water. Cultivating forests and growing grasslands can biologically contain natural rainfall. At the same time, they can regulate the surface runoff and preserve water and soil. According to the observations of scientific research units in the northwest Loess Plateau, if the total rainfall is 340 mm, the amount of soil eroded from forestry land is 4 kilograms per mu; on grassland, the amount is 6.2 kilograms; and it is 238 kilograms in cultivated areas. On land lying fallow after cultivation, it can be as much as 450 kilograms per mu. Construction and vegetation measures should supplement each other. One-sidedness in ideology, thinking in terms of absolutes, or having a one-track mind in actual work will bring about unfavorable results. Since the establishment of the PRC 30 years ago, we have scored significant achievements since we took improving the soil and regulating rivers and watercourses as the key link in agricultural capital construction. This played an important role in preventing droughts and floods, eliminating floods and promoting the development of agricultural and animal husbandry production. However, over one period of time, due to lack of experience, the leading departments seriously ignored the vegetation measures of cultivating forests and growing grasslands in their guiding principles for agricultural capital construction. Therefore, it is necessary that we attach great importance to stressing the importance of vegetation measures. In future, we still have to promote conservancy projects, but at the same time, we must devote equal energy to promoting forestry so that the measures taken in construction and vegetation can support each other and we can unify transforming the mountains with taming the rivers.

To tame the rivers we must transform the mountains. In our country, some rivers flood frequently. Various factors cause this calamity. There are factors concerning hydrology and meteorology, the capacity of flood discharge and so on. The mountain areas are the source of large and small rivers. If there is little vegetation in the upper reaches of a river, once there is concentrated torrential rain, the middle and lower reaches will flood. Moreover, in forest areas, the flood season of rivers and streams is usually half a month or 1 month later than regions with little or no forest, thus the concentration of runoff is greatly mitigated there. The masses are right in saying: "Planting trees in hills is like building reservoirs; they can absorb heavy rainfall and supply water when no rain falls." To bring floods under permanent control, constructing water conservancy projects

and grasping afforestation in mountain areas in the upper reaches of rivers are important aspects of carrying out comprehensive harnessing of floods in rivers and streams. The tributaries of the Hai River rise in the Taihang Mountains. If the Taihang Mountains plant trees and construct embankments like the remote mountain areas in Xingtai, it will be very beneficial for harnessing the Hai River. With this added to the measures taken to build water conservancy projects on the middle and lower reaches and the afforestation on the Hebei Plains, it will not be long before the Hai is under permanent control.

CSO: 4007

'XINHUA' REPORTER, CORRESPONDENT ON STATE SEED FARMS

OW071127 Beijing XINHUA Domestic Service in Chinese 0306 GMT 7 Oct 80

[Letter from XINHUA correspondent Shu Daixin and reporter Ju Bomin: "The Problem of Seed Farms Consuming the Seeds They Produce Must Be Solved"]

[Excerpts] Beijing, 7 Oct (XINHUA)--Seeds are the most fundamental means of production in agricultural production. To utilize crop seeds of fine strains is an important measure in increasing agricultural production. Since ancient times, peasants in China have always regarded seeds as the basis for the development of production. If one is not poor to the point of dying from starvation, who would be willing to consume grain reserved for seeds? However, with the state demanding that state seed farms in China consume the "grain they produce themselves," they have no alternative but to regard the seeds they grow as a source of food and fodder. This tendency is becoming more and more prevalent. Recently, we learned from the China Seed Company that last year the 2,290 state seed farms in the whole country turned out more than 700 million jin of seeds of all kinds including those of grain, cotton and oil-bearing crops. More than 200 million jin of them were consumed as food and fodder by people and draft animals on these state farms. An investigation shows that the more than 70 seed farms in Nei Monggol consumed over 14 million jin of seeds as food, accounting for 47 percent of the total seed output in the autonomous region. These farms have only provided the state with 12 million jin of seeds.

Why do state seed farms consume the seeds they produce themselves?

The three main reasons are as follows:

1. For many years, the departments concerned have not adopted measures to completely solve the problem of food grain for the workers of the state seed farms and their dependents. This has forced some workers and their dependents to use the seeds they produce as food grain.

2. The seeds of fine strains of the state seed farms are supposed to be sold to the local seed companies. The seed companies then trade food grain for seeds. However, the seed farms have to wait for 3 to 6 months before

the food and fodder grain arrive at the seed farms. To solve the problem of a temporary food shortage during that period, the state seed farms must retain a part of the seeds they grow as their own food grain (or edible oil supply), before they hand over the seeds to the local seed companies.

3. As compared with seeds, the food grain supplied to the seed farms is very inferior in quality. On the other hand, the food grain supplied costs three to five fen more per jin as compared with the price of the seeds sold to the seed companies.

As a result, the state seed farms prefer to consume the seeds of the fine strains they grow rather than the food grain it is supplied with.

As early as 1962, the State Council in its "Decision to Strengthen the Work of Seed Cultivation" had clearly pointed out: "Farms that carry out agricultural experiments should be exempted from fulfilling the state grain purchase targets. The seeds of the fine strains they cultivate should be delivered to seed stations for proper management and propagation." However, in some localities, a number of leading organs have not only failed to help seed farms completely solve the problem of food grain, but even now, they still let the seed farms shoulder the burden of fulfilling the state grain purchase targets. If the departments concerned are able to help save the 200 million jin of seeds consumed by the state seed farms in China, the total area sown with seeds of fine strain in the whole country will be expanded by 20 to 30 million mu, and the total grain output of the state and the collective increased by one to two billion jin. Why is not this kind of good deed which benefits the state and the people not being carried out?

CSO: 4007

BRIEFS

FORESTRY ECONOMY SOCIETY INAUGURATION--Beijing, 18 Sep--The China Forestry Economy Society was recently inaugurated in Beijing with Yong Wentao elected chairman and Yu Guangyuan serving as adviser. Simultaneously with the inauguration of the society, the first Nationwide Forestry Economy Academic Forum was held with some 100 representatives from scientific research units, schools and production enterprises attending. Some 200 papers were heard at the forum. [Beijing XINHUA Domestic Service in Chinese 0120 GMT 18 Sep 80]

RURAL CROP MANAGEMENT--Beijing, 18 Sep--The masses in China's vast rural area are intensifying field management for late-autumn crops in efforts to make up the losses in summer grain and early-rice output caused by natural disasters. The area of late-autumn crops accounts for one-third of the total area of crops planted in the whole year. Recently the bad weather characterized by waterlogging in South China and drought in North China has started to improve and the peasants are seizing the opportunity to tend their crops. As a result of implementing flexible rural economic policies this year, the peasants' burden has been alleviated and their enthusiasm for resisting natural disasters and winning a rich harvest is rising. [Beijing XINHUA Domestic Service in Chinese 0140 GMT 18 Sep 80]

BRIGADE'S HYBRID RICE YIELD--Nanjing, 18 Sep--Nearly 100 delegates to the National Hybrid-Rice Scientific-Research Cooperation Conference recently visited Aishanxi production brigade, Lianfang Commune, Yixian County, Jiangsu Province, where there were 1,300 mu of high-yield hybrid rice seed plots and 120 mu of hybrid paddy rice free of insects and any impurities. Lin Shan, vice president of the Chinese Academy of Agricultural Science spoke very highly of the brigade's achievement. For three consecutive years, the brigade's hybrid rice yield has been around 1,500 jin per mu. Last year, the "Nanjou No 2" variety yielded 1,711 per mu. [OW221431 Beijing XINHUA Domestic Service in Chinese 0319 GMT 18 Sep 80]

GOAT MILK PRODUCTION--Jinan, 26 Sep (XINHUA)--Recently the ministries of agriculture, light industry and commerce jointly sponsored a national goat milk production meeting in Laoshan County, Shandong Province. The meeting was attended by representatives from those counties which are milch goat production centers in the country. According to statistics revealed at

the meeting, last year China produced some 7,000 dun of goat milk products, accounting for 15 percent of the total output of daily products in the country. By the end of last year, the number of milch goats in China reached some 2 million head. The total goat milk production last year amounted to 470 million jin, showing a 2.6-fold increase above 1978. Now most of the 29 counties classified as milch goat production centers in the country have set up milk processing plants. [Beijing XINHUA Domestic Service in Chinese 0141 GMT 26 Sep 80]

MORE ON MULTI-EAR CORN--Beijing, 26 Sep (XINHUA)--China has achieved initial success in developing a multi-ear corn strain. Since each plant of this strain bears three or four ears instead of one or two as in the case of the ordinary strain, the output per mu is generally greater. The success in developing this new strain is credited to Zhou Zishu [0719 1311 1859], a deceased engineer of the Genetics Institute of the Chinese Academy of Sciences, who started the research in this respect 20 years ago. In 1978 the corn seeds he developed were test-planted in more than 130 counties in various parts of the country. The results showed that the new strain of corn, if sown in spring, gives a yield of 500-1,600 jin per mu, which is 14-125 percent more than the ordinary strain. If it is sown in summer, the yield is generally 450-1,000 jin per mu, or 11-73 percent higher than the ordinary strain. Since Zhou Zishu passed away in February this year, the research work in this respect has been continued by his colleagues in the Genetics Institute. [Beijing XINHUA Domestic Service in Chinese 1149 GMT 26 Sep 80]

MARKETABLE CATTLE--Beijing, 26 Sep (XINHUA)--Through 2 years of efforts, China has achieved initial results in developing the production of marketable cattle. Now there are 200 counties which have been built into production centers for marketable cattle. Scientific methods are practiced for raising cattle, and artificial insemination is used for their propagation. At present there are 16 frozen semen storage stations, 13 supply stations which provide liquid nitrogen for use in storing frozen semen and many artificial insemination spots in these counties. In 1979, they sold 68,900 head of beef cattle to the state, accounting for more than 90 percent of the beef cattle which the state purchased from various sources. With the abundant cattle supply, the country's export of live beef cattle in 1979 increased 84.9 percent compared with the preceding year. [Beijing XINHUA Domestic Service in Chinese 1214 GMT 26 Sep 80]

OIL-BEARING CROPS OUTPUT--Beijing, 30 Sep (XINHUA)--China has increased oil-bearing crops production in 1980 despite unfavorable weather conditions. Total output is higher than in 1979, a good-harvest year. In the past 3 years Shandong turned out over 10 million dan more peanuts as compared with original plans. Total sunflower output in Liaoning, Jilin and Heilongjiang in 1980 is 50 percent higher than in 1979. [Beijing XINHUA Domestic Service in Chinese 1423 GMT 30 Sep 80]

AFFORESTATION ACTIVITIES--Since 1977, 3.2 billion trees have been planted on 15 million mu of the 100 million mu of farmland in the northern China plain. [Beijing Domestic Service in Mandarin 1200 GMT 1 Oct 80]

AGRICULTURAL SCIENTIFIC RESEARCH AWARDS--Beijing 27 Sep (XINHUA)--The Chinese Ministry of Agriculture has commended 55 research achievements in agriculture and animal husbandry for 1979, awarding first prize to 36 and second to 19. The achievements include: breeding of new strains of cotton, wheat, sweet potato and maize, surveys of wild soyabeans and species of pigs, prevention and control of plant diseases and insect pests using beneficial insects, transformation of saline-alkaline land and the use of zinc fertilizer. Meanwhile, the Ministry of Forestry has decided to introduce 18 scientific achievements throughout the country. Among them are fine strains of walnuts and Chinese chestnuts, use of a bacillus (bacillus thuringiensis) to fight harmful forest insects and the use of a parasitic wasp to control pine caterpillars. [Text] [OW281637 Beijing XINHUA in English 0713 GMT 27 Sep 80]

XINJIANG, BEET HARVEST NEI MONGOL--Beijing, 27 Sep (XINHUA)--Xinjiang Uygur Autonomous Region in northwest China has registered a 30 percent increase in total sugar beet output this year, compared with 1979. A good sugar beet harvest is also expected in Inner Mongolia, another major beet growing area in China. Xinjiang's sugar beet yield and its sugar content are the highest in the country. Per-hectare yield last year exceeded 15 tons, equivalent to 2.4 tons of sugar. Sugar beet grows well in Inner Mongolia where there is abundant sunshine and good water and soil conditions and the temperature varies greatly between day and night. The region has 67,000 hectares under sugar beet this year, an increase of 25 percent over last year. [Text] [Beijing XINHUA in English 1231 GMT 27 Sep 80]

CSO: 4020

BRIEFS

RAPE SEEDLINGS--As of 18 September, some 244,000 mu of rape seedlings were cultivated in Fuyang and Suxian prefectures of Anhui Province, an increase of 192,000 mu more as compared with the same period of 1979. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

PEANUTS HARVEST--Wuhe County in Anhui Province has reaped some 28 million jin of peanuts from its 139,000 mu fields this year. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 25 Sep 80 OW]

COUNTY RICE--Changfeng County, Anhui, has begun harvesting its 500,000 mu of middle-season rice. The total output and per-unit yield are expected to reach 300 million jin and 550 jin respectively. This year, more than 75,000 mu of rice fields in the county were affected by natural disaster, but the county will still overfulfill the plan for total output because of an increase in per-unit yield. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 16 Sep 80 OW]

ANHUI AQUATIC PRODUCTION--The Anhui Provincial CCP Committee held a provincial conference an aquatic production 22-28 September. Attending the conference were party and government leaders from all prefectures, municipalities and major fish-producing counties as well as representatives of major state-owned fish farms and advanced fish-breeding communes and brigades. The conference adopted a preliminary plan for fishery development in the next 10 years. It was pointed out at the conference that the province has 18 million mu of watery area, including 8 million mu suitable for fish-breeding. However, the province's fishery output value in 1979 accounted for only 0.52 percent of the total agricultural output value. As a result, the masses were very unhappy about the shortage of fish. The conference maintained that the key to accelerating fishery production was emancipation of the mind and implementation of a more flexible policy. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 2 Oct 80]

CSO: 4007

BRIEFS

LOTUS SEEDS--Fuzhou, 28 Sep (XINHUA)--A bumper harvest of lotus seeds has been reported from Jianning County, Fujian Province. The total production amounts to 130,000 jin, showing a twofold increase over last year. [Beijing XINHUA Domestic Service in Chinese 0113 GMT 28 Sep 80 OW]

CSO: 4007

BRIEFS

GUANGDONG AGRICULTURAL PLANNING CONFERENCE--The Guangdong Provincial People's Government held a provincial conference on agricultural zoning from 25 August to 8 September. Some 250 people attended the conference and Vice Governor Meng Xiande presided over the conference. The meeting summed up past experiences in promoting agriculture and came to the conclusion that science is important in promoting agriculture. It is necessary to do a good job of agricultural planning to speed up agricultural development. The meeting further pointed out that party committees and governments at all levels must attach importance to agricultural zoning and bring the role of technicians into play. The meeting demanded that departments concerned carry out inspections over land, water conservancy, climate and living conditions throughout the province in 5 years' time in order to develop planning on agricultural zoning for local conditions. [HK060702 Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 14 Sep 80]

CSO: 4007

BRIEFS

MUDANJIANG HARVEST REPORT--Mudanjiang Prefecture in Heilongjiang Province has collected 1.7 million jin of honey and 380,000 jin of edible fungus. The total value of the minor autumn harvest of honey, edible fungus, mushrooms, medicinal herbs, wild grapes and wheat straw reach some 9.038 million yuan. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 22 Sep 80]

CSO: 4007

BRIEFS

HENAN STATION COMMENTARY--Henan station carried a commentary on 14 September on attaching importance to studying the new situation and improving farmland water conservancy facilities. The comentary held: it is necessary to consolidate and strengthen the water conservancy force in order to improve farmland water conservancy facilities. We must appoint professional people to be in charge of water and electricity projects and mechanized and electrical facilities. We must seriously deal with people who damage these projects and punish people in accordance to the law for any criminal negligence. Party organizations and governments at all levels must enforce the new responsibility system and popularize new experience to further improve water conservancy work throughout the province. [Zhengzhou Henan Provincial Service in Mandarin 1130 GMT 14 Sep 80]

HENAN FARMLAND CAPITAL CONSTRUCTION MEETING--A provincial meeting on farmland capital construction and water conservancy work was recently held in Zhengzhou. The meeting summed up past experiences in farmland capital construction and water conservancy work and arranged for water conservancy projects in 1981. About 1,300 small-scale water conservancy projects were started last year and over 1,200 projects have been completed and put into operation this year. The completed water conservancy projects served to irrigate an area of 32 million mu of wheatfields. However, development of water conservancy in the province was inconsistent. Some of the brigades slackened their efforts in this respect when there were no great disasters. In light of this the meeting held that water conservancy is of great importance in agricultural development and demanded that: 1. all places eliminate the remnant poison of the ultraleftist line and work in accordance with objective laws; 2. formulate new practical measures in accordance with the new situation; and 3. rely on young and capable cadres to promote water conservancy work. [Zhengzhou Henan Provincial Service in Mandarin 1130 GMT 14 Sep 80]

CSO: 4007

BRIEFS

PREFECTURE AFFORESTATION--Wuhan, 24 Sep (XINHUA)--Yichang Prefecture, Hubei, has afforested some 1 million mu of land since the beginning of this year. [Beijing XINHUA Domestic Service in Chinese 0702 GMT 24 Sep 80 OW]

CSO: 4007

BRIEFS

HUNAN VEGETABLE SUPPLY--Since August, vegetable supply has been short in some parts of Hunan. The Hunan Provincial CCP Committee and the Provincial People's Government have decided to adopt four measures to improve the situation: 1. It is necessary to implement the principle of taking vegetable cultivation as the key in the suburbs and make full use of unused arable lands. 2. It is necessary to implement planned production and procurement of vegetables. Supply and purchase departments must sign contracts with the production departments. It is necessary to punish and fine those who sell vegetables at high prices in the market before fulfilling the procurement task. 3. Municipalities and counties must grasp the opportunity to grow more vegetables and fulfill autumn and winter sowing. 4. It is advisable to adopt suitable emergency measures as needed. The Hunan Provincial CCP Committee and the Provincial People's Government demanded that the commerical department supply supplementary preserved vegetables. The provincial grain department decided to sow an additional 1.8 million jin of beans and rice in Changsha, Hengyang, Zhuzhou, Xiangtan and Shaoyang Municipalities. [Changsha Hunan Provincial Service in Mandarin 1100 GMT 11 Sep 80]

CSO: 4007

BRIEFS

RAPE PRODUCTION--Wujiang County of Jiangsu Province planted 190,000 mu of rape this year, and the total output amounted to 37 million jin. The county has planned to expand the sown acreage to 230,000 mu, topping last year by 40,000 mu. As of 18 September some 2,700 mu of rape seedlings were planned throughout the county. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

WHEAT OUTPUT--Thanks to painstaking struggle against natural disasters, total output of 630,000 mu of wheat in Jiangsu's Fengyang County exceeded 200 million jin this year, topping 1979 by more than 10 percent. The county party committee has decided to reopen and expand the (Dajingshan) phosphate fertilizer plant and build more small phosphate fertilizer plants at commune level in order to provide ample supply of chemical fertilizer to autumn wheat sowing. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

CSO: 4007

BRIEFS

NEI MONGGOL OIL-BEARING CROPS--Ju Ud League, Nei Monggol Autonomous Region, is expecting a good harvest of oil-bearing crops despite natural disasters. The league is now harvesting 1.3 million mu of oil-bearing crops. Total output is estimated at 60 billion jin, up 20 percent over 1979 levels. [SK061200 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 4 Oct 80]

CSO: 4007

BRIEFS

DAM CONSTRUCTION COMPLETED--A great dam near (Dongdatan) reservoir, Kaiyuan County was completed in early September. This is one of the key water conservation projects of Qinghai Province. This dam is 22 meters high, 450 meters long and has a water storage capacity of 22 million cubic meters. Upon completion, this dam will play a role in alleviating water shortage in the eastern agricultural areas in our province and will provide a certain amount of water for urban areas. [Xining Qinghai Province Service in Mandarin 1100 GMT 22 Sep 80]

CSO: 4007

BRIEFS

CHANGWEI PREFECTURE TOBACCO HARVEST--The major tobacco productive area, Changwei Prefecture in Shandong Province, reaps a bumper tobacco harvest this year. The total output of the 656,000 mu farmland of tobacco crop is estimated to be more than 1.9 million dans, an increase of 5 percent over 1979. As of 10 September, the total procured volume was more than 1.72 million dans, an increase of 39.3 percent over the last year period. According to the statistics, the prefecture will receive an income of 19 million yuan from the tobacco product. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 16 Sep 80 SK]

CSO: 4007

BRIEFS

SICHUAN CROP PRODUCTION ARRANGEMENT--SICHUAN RIBAO carried a commentator's article on 12 September on readjustment of crops arrangement and implementing planning on spring-harvested crop production. The article said: it is necessary to act in the light of local conditions to grow wheat, develop production of rape and improve the per unit area yield. The article demanded that leading organs at all levels implement the party's policies to strengthen the system of production responsibility and enhance the peasants' activism in employing new scientific and technological methods. It is necessary to implement these measures to increase the production of spring-harvested crops. [Chengdu Sichuan Provincial Service in Mandarin 2300 GMT 13 Sep 80]

CSO: 4007

BRIEFS

TIANJIN PORK PRICE--The price of pork, which has been reduced during the period of the mid-autumn festival and national day, will be restored to its original price 6 October. The original price was 1.2 yuan per jin. [Tianjin City Service in Mandarin 0030 GMT 6 Oct 80]

CSO: 4007

BRIEFS

BEET HARVEST--Xinjiang Autonomous Region has gathered a bumper harvest from 350,000 mu of beet. The total output is expected to reach 400,000 dun, an all-time high record for Xinjiang Autonomous Region. [Urumchi Xinjiang Regional Service in Mandarin 1620 GMT 28 Sep 80 OW]

PEAR HARVEST--Urumqi, 28 Sep (XINHUA)--Pears are being harvested in Bayingolin Mongol Autonomous Prefecture of Xinjiang Uygur Autonomous Region. The total output is estimated at more than 3 million jin, exceeding last year's record by more than 30 percent. [Beijing XINHUA Domestic Service in Chinese 0117 GMT 28 Sep 80 OW]

COUNTY CROPS--Yining County, Xinjiang, reaped a good harvest of oil-bearing crops on its 130,000 mu this year. Both per-mu yield and total output were all-time highs. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 15 Sep 80 OW]

CSO: 4007

BRIEFS

YUNNAN GRAIN PROCUREMENT--Yunnan Province has greatly reduced the quotas for procuring grain so as to relieve the burden on the peasants. In 1979, the province reduced the quotas for procuring grain in some prefectures by 630 million jin. The Provincial CCP Committee and Provincial People's Government recently decided to further reduce the quotas for procuring grain by some 60 million jin. The number of production teams in the province which are exempted from grain procurement has increased from 7,000 before 1978 to now some 26,000, which accounts for 17.9 percent of the total number of production teams. [Kunming Yunnan Provincial Service in Mandarin 1100 GMT 13 Sep 80]

CSO: 4007

DEVELOPMENT OF SHALLOW SEA HATCHERIES DISCUSSED

Quick Results Expected

Hangzhou ZHEJIANG RIBAO in Chinese 15 Jul 80 p 2

[Article by Wang Zhuqing [3769 4554 7230]: "Go After the Benefits From the Shallow Sea and Beaches; Actively Develop Ocean Hatcheries", a reprint from ZHEJIANG KEJI BAO [ZHEJIANG SCIENCE AND TECHNOLOGY NEWS PAPER]

[Text] Ocean hatcheries are an endeavor requiring little investment of capital that produce consistent yields, show quick results, and provide great earnings. Vigorous development of ocean hatcheries and the hatching industry possesses major significance for providing the people larger quantities of aquatic products, for increasing exports, and for enlivening the domestic market.

Zhijiang Province faces the Eastern Sea with its more than 2100 islands and inlets. The length of the mainland coast is more than 2200 kilometers, and it is dotted with the mouths of numerous rivers emptying into the sea. It has a broad area of ports, shallow sea, and beaches. The waters teem with living things, plankton, all kinds of shellfish, aquatic plants, fish, and shrimp of numberous kinds. Propagation is rapid, providing conditions for the development of ocean water hatcheries. Preliminary statistics show that a shallow sea and beaches of more than 1.5 million mu exists along the coastline of Zhejiang Province, which can be used for development of hatcheries. This advantage has not, however, been given full play for a long time. In 1979, shallow seas and beaches already in use for hatching throughout the province amounted to only 166,500 mu, only 11.1 percent of the area suitable for hatching. Total output was 780,000 dan, which was only 5.5 percent of total sea catches. It may be seen that a very great potential remains for the development of ocean water hatcheries in Zhejiang Province.

In order to rapidly increase the ocean hatchery industry in Zhejiang Province, the mentality of "emphasizing catches while slighting breeding" has to be overcome. For a long time, quite a few cadres and masses have felt that "breeding for a year is not as good as another net full of catch."

Consequently, not only has the hatching industry been neglected, but unbridled and reckless fishing has destroyed fishing industry resources. Presently, some countries in the world where the fishing industry is advanced have begun to switch from a fish catching industry to a fish hatching industry, and with some success. Relating this new trend in fishery production to the realities of our own province makes it imperative that time and effort be put into improving the ocean hatchery industry.

The blind reclamation of land from the sea to create farmlands is one of the main reasons for the impairment of ocean hatching. In Ninghai County, for example, because of the building of dykes on the beaches and the blocking of ports, the surface of the beach was raised and became hard, destroying the original environment for the growth of organisms. From 1972 onward, large quantities of hatched oysters died, and the hatching area declined from more than 7300 mu to more than 200 mu in 1977. Output of 75,000 dan declined to 29,000 dan. Consequently in order to benefit from the advantages of the shallow sea and beaches for the development of an ocean hatching industry, the pros and cons of the land reclamation question have to be discussed and account taken of the economic consequences. In shallow sea and beach areas suited to the hatching of shellfish, fish, and shrimp, and particularly in bases for young shellfish, the emphasis should be on development of ocean hatcheries and not on land reclamation. In places where dikes have been built but the land not yet reclaimed from the sea, methods should be adapted to the local situation for overall development, rational use, and the restoration and development of fish and shrimp hatching.

During the past several years, Zhejiang Province has hatched (raised) or is presently test hatching (raising) more than 10 varieties of aquatic life including kelps, laver, razor clams, oysters, blood clams, clams, mussels, sea crabs, prawns, barracuda, mullet, and abalone. Except for the water plants, there has been a shortage of the fry and larvae of all varieties. Therefore, scientific research must be intensified and efforts made to overcome problems in artificial propagation of fry and larvae. The larvae of the razor clam can be raised in a confined area or can be collected by scraping or dregging and temporarily raised over winter. Simultaneous with the artificial propagation of mud blood clams (Area subsrenata Lischke), there can be natural breeding in a walking on two legs, so as to bring about an early revival of young clams. Japanese introduction of the method of growing oysters suspended from a raft has met with substantial success. Now a good job must be done of artifical propagation of fish so that reproduction generation after generation will go on in this province. Though still not able to meet production conditions, vigorous efforts should be made to promote the three dimensional hatching of oysters that has been done in Zhejiang Province, and scientific experiments should be continued on the artificial propagation of the young of prawns, abalone and mullet, and barracuda in order to put on a sound foundation a source of supply of young.

Land Reclamation Proposals

Hangzhou ZHEJIANG RIBAO in Chinese 26 Jul 80 p 1

[Article by Zuo Zhongmou [1563 0112 6180], Provincial Bureau of Reclamation: "Utilization of Coastal Beaches Has To Be Done with Zhejiang Realities In Mind"]

[Text] Editor's Note: Zhejiang Province borders on the Eastern Sea and has a coastline 2200 kilometers long as well as a large area of harbors, shallow coastal waters, and beaches. How to make fullest use of the natural advantages, hasten numerous understakings in coastal areas, and develop production in the fishing industry is a major problem in getting the most benefit from the mountains and the sea that awaits study and solution. Today, Comrade Zuo Zhongmu expresses some views on this subject. We hope that more comrades will participate in this exploration to provide for consideration various proposals and suggestions combining theory and practice.

Zhejiang Province has a long history of reclaiming land from the sea, which has been of definite strategic significance in the development of the national economy. In recent years, however, some comrades have been more deprecating of sea reclamation endeavors. Now that the Provincial CCP Committee has proposed going all out for advantages from the mountains and the sea, I would like to talk about problems in the overall use of beach resources.

Among Zhejiang's strong points, one is the extremely abundant beach rasources. The area of beaches at low tide throughout the province is close to 4 million mu, and they are constantly in process of growing and expanding. They provide both various bases for the growth of agriculture, forestry, livestock raising, sideline occupations, fisheries, and light industry, but also offer an outlet for the use of excess labor. To develop the beaches, it is first necessary to initiate projects to reclaim land from the sea.

Some people presently fear that reclamation of land from the sea may impair the breeding of aquatic products. I feel that there is a difference between fresh water breeding and ocean water breeding. Reclamation of land from the sea stands first among all the other benefits as far as fresh water breeding is concerned. This is so because once the land has been reclaimed from the sea, all the mouths of rivulets and lowlying stretches in the interdicted ports, rivers, and within the reclaimed area will become fresh water surfaces, and will consequently be fine bases for fresh water breeding of aquatic products. At the 6500 mu fish farm in the Xiaoshan County reclamation enclosure, for example, for every mu of water surface, output reached 164 jin. On the southeast coast of Zhejiang Province, the water surface at most of the projects for the reclamation of land from the sea amounts to about 30 percent of the total area. In addition there are also the water surfaces of the upper reaches of rivers and harbors that have been interdicted in the reclaimed area, where fresh water breeding may be developed. A rough estimate of the fresh water breeding benefits brought about in recent times through projects for the

reclamation of land from the sea places annual fish production at more than 40 million jin. Therefore, land reclamation projects not only do not conflict with fresh water breeding, they are a necessary method for its development. As regards sea water breeding, most important at the present is propagation in beach areas, i.e. the propagation of razor clams, blood clams, oysters, and laver. The State Scientific Commission has organized several score specialized research units (including the disciplines of biology and aquatic products). In 1979, they began a comprehensive survey of beach resources at Wenzhou, which demonstrates that the distribution of the beach area breeding industry is determined by the living habits of mollusks, which are located mostly in areas below the mid-tide, while projects for the reclamation of land from the sea are above the mid-tide position, so that there is no fundamental clash of interest between the two. At the present time, there are almost 1 million mu of beach resources in the Wenzhou area, which offer a broad field of activity for the development of agriculture, forestry, livestock raising, sideline occupations, fisheries, and light industry. The major contradiction at the moment is a lack of an overall unified plan for development and use. None of the trades or industries has made full development or use of these resources. What should be pointed out in particular is that the constant buildup through silting of the beaches is a natural objective law in the motion of the coastal lands of Zhejiang. As the beaches become higher through silting, the mollusks automatically move to lower parts of the beach. The breeding of aquatic life in the beaches of coastal southeastern Zhejiang has been through a gradual movement and development toward the open sea since time immemorial. As for the major bases for current beach propagation, through overall development and unified planning, it should be possible and can be possible to protect and lengthen the years of production to get the most economic benefits.

In summary, consideration of the problems has to begin with the realities in Zhejiang; in the development of coastal researces single one stroke solutions are to be avoided.

How can the comprehensive development and use of beach resources be implemented? This is a problem that touches on policy, organization, and funds, and which merits careful study for which various assumption can be made. The first assumption is:

1. The need for a management structure with unified responsibility for comprehensive development of beach resources, which can formulate unified plans for comprehensive development and use in accordance with national marine laws and land laws, coordinating the welfare of all (farm reclamation, aquatic products, transportation, water conservancy, and light industry).

2. Establishment of a businesslike land reclamation company whose principl duty would be the operation of the various sea reclamation projects. Following reclamation, these projects would be developed and used by various production organizations in accordance with unified planning.

3. All projects for reclamation of land from the sea should implement an operational program for walking on two legs using the state and the collective.

4. The speed and scope of development of land reclamation endeavors will depend on the needs of development of the national economy and the availability of capital in making steady progress. During the period of readjustment of the national economy, the emphasis should be placed on the building and training of a technical contingent of core members versed in the reclamation of land from the sea.

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CSO: 4007

RECLAMATION OF COASTAL AREAS DEBATED

Conflict Between Hatcheries, Reclamation

Hangzhou ZHEJIANG RIBAO in Chinese 23 Aug 80 p 2

[Article by Yang Shiyu [2799 1102 3768], Tidelands Enclosure Office, Provincial Farm Reclamation Bureau: "More Discussion of Utilization of Coastal Areas"]

> [Text] Editor's Note: The publication in this newspaper of an article written by Comrade Zuo Zhongmou [1563 0112 6180] on the subject of the utilization of coastal areas of this province has aroused the serious attention of quite a few comrades who have hurriedly sent in drafts in order to participate in an exploration of this subject. We will selectively print these drafts one after another. These drafts point to the conflict between enclosure of tidelands for reclamation and the use of coastal areas for hatcheries, and they propose ways of resolving this conflict in light of practical experiences. We hope that more comrades will join in this dicussion, offering advice and suggestions beneficial to the large-scale development of our land. Drafts may express personal views, or they may provide work experiences or be survey reports.

The coastal regions of Zhejiang Province are vast and their uses broad. There are also many points of conflict about them, the most prominent of which is the conflict between reclamation and hatcheries. Some people presently feel that hatching endeavors in coastal areas are in a slump, mostly because of enclosures of tidelands for the reclamation of land. I feel one should not say this. Statistics from departments concerned show that in the year 1957, following Liberation, the output of hatcheries throughout the province was 40,000 dan and the coastal area enclosed was about 1,000 mu. In 1978, hatchery output was 720,000 dan and the enclosed area was more than 100,000 mu. These figures tell us clearly that one cannot make the sweeping generalization that enclosure of tidelands destroys hatching. However, neither can we come to the other conclusion and say that there is no conflict between land reclamation and hatching, or say that

land reclamation does not impair hatching. I feel that a problem of contention about coastal areas objectively exists. The correct way to solve this problem is to adopt methods on the basis of the coastal area involved to make rational use of it. On the basis of the actual situation pertaining in our province and on the characteristics of coastal areas, I have proposed the following several principles for a rational use of coastal areas and for the common study of comrades.

First is that the major orientation of use of coastal areas has to be determined on the basis of their individual characteristics. Since coastal areas have a specific geographical position, they possess certain regional characteristics. For example, coastal areas at the mouth of the Qiantang River and in Hangzhou Bay are quite sandy, while in-shore areas along the coast of south central Zhejiang are sitted. In river mouth areas the salinity of the ocean water is fairly low, while in the areas of islands and islets, salinity is quite high. In harbors and bays, waves are small and the water and soil are consequently rich in organisms, while in coastal areas fronting on the open sea, there is a paucity of biological organisms. Consequently, the differences in coastal areas and the suitable conditions required for each industry regulate the orientation of the use of coastal areas.

Second is a rational pattern based on coastal areas with different tides. Coastal areas must be designated as high beach, medium beach, or low beach in accordance with their morning and evening tide characteristics. Medium beaches must be designated in terms of mean tides as well as in terms of the high point and low point of tides as production realities require. In-shore coastal areas of Zhejiang Province tend to be silted with the time of submergence and emergence of the beach, with each tide and the cycle of the tides varying. As a result, separate ecologies and environments have been formed. According to investigations conducted by the biological team of the Wenzhou Test Site Survey Detachment, it is in medium beach harbors and gulfs that organisms are most crowded together and luxuriant. In the case of enclosure of tidelands for land reclamation, given the present level of technology and economic circumstances, the high point is usually about the average tide mark. In areas suited to hatching, a definite conflict between hatcheries and land reclamation exists in medium beach stretches. Therefore, in harbors and bays where hatching is paramount, so long as fish fry farms and certain high beach propagation of mollusks are potected first, high beach land reclamation may be carried out. However, in areas suitable for hatching in harbors and bays, silting caused by man is to be avoided.

Third is the need to given attention to the ecological balance. We call attention to the ecological balance in order to protect and build a good cycle in the system of ecological balance and to prevent and change a vicious cycle. As regards projects that will effect great changes in the ecology and environment such as filling in harbors or interdicting water courses, the total situation has to be looked at, the future considered, the pros and cons weighed, and prudence exercised in action.

Fourth is the need for an economic comparison of many programs when undertaking reclamation, with selective development and use so that the maximum economic benefits may be obtained from coastal areas.

Fifth is coordinated enclosure of the sea to reclaim land, rational allocation of the land, and comprehensive use of the land. Because of the differences in coastal area, it is only possible to determine the main orientation for development and use, but this is not the same as doing things in a blanket fashion. In actual fact, in places where reclamation is paramount, there can be hatcheries, and in places where hatcheries are paramount, there can be land reclamation. The same applies to the salt industry. Only through proper coordination can the one promote the other. In some coastal area, it is only through overall development that the goal of attaining maximum benefits can be achieved. For the reclamation of land as well as for the evaporation of sea water to produce salt and for some ocean breeding ponds (such as for prawns), projects to enclose the sea must be carried out. At the same time, these enclosing projects may be combined. At the present time, some prawn hatching ponds have been built at the edge of salt making areas or in coastal areas reclaimed from the sea.

Just how can a fairly sensible plan for use be formulated? Necessary first of all is a comprehensive survey by many disciplines of resources in the coastal areas of Zhejiang Province in order to understand the situation as regards coastal area resources and to make a quantitative and qualitative evaluation of coastal sea resources. This is a fundamental task for which the expenditure of a certain amount of manpower, financial resources, and material resources as well as a certain amount of time will be required in order to get firsthand material and provide scientific data for economical and rational development and use of coastal resources.

Additionally, in order to assure rational use of land resources and effective management of land resources, establishment of a land resources special management organization is urgently required for the sake of unified and integrated management of land resources from investigation and statistics to examination and approval of plans, from prospecting and design to construction of tidelands enclosure projects to reclaim land from the sea, and from the implementation of laws pertaining to land to the requisitioning of the land.

Respecting Natural Laws

Hangzhou ZHEJIANG RIBAO in Chinese 23 Aug 80 p 2

[Article by Shi Rende [2457 0088 1795], Zhejiang Provincial Institute of Oceanography and Aquatic Products, Wenzhou Branch: "In Using Coastal Areas, Natural Laws Must Be Respected"]

[Text] In recent years development and use of coastal resources has attracted the serious attention of every trade and industry, and the uses made of coastal areas have gradually expanded. Nevertheless, use of coastal areas is still far from sufficient, and as a result of a lack of knowledge

about natural laws, coordination among sectors is also insufficient. As a result, some conflicts have come about in the process of making use of the resources, and these conflicts have adversely affected full use of natural advantages. Therefore, it is very necessary to launch a wider-ranging discussion of how to make fullest use of natural advantages, and how to use the resources of the coastal seas.

I feel that it is necessary to adapt methods to local situations in the use of coastal resources making the most of advantages within advantages. In the case of coastal areas within Leqing Bay, for instance, there are abundant living creatures, the ocean water is of moderate salinity, and winds are mild and waves calm within the bay, making for very beneficial growth and development of marine life. This area can become a major one in Zhejiang Province for the hatching in coastal waters of qing [5808] and blood clams. Leqing Bay's output of mollusks accounts for 50 percent of that of the entire province, and output of qing [5808] fry amounts to 80 percent. In the Qingbei and Baixi communes located along the coast, economic income from the hatching industry amounts to from 60 to 70 percent of the total. In coastal areas such as this, there should be vigorous development of the hatching industry to make them become the hatching bases in Zhejiang Province for mollusks and prawns. Another example is the coastal areas at the mouth of the Ou River and the mouth of the Ao River. Here a vast area is silting rapidly, and it is a major area for the development of sea enclosures both in order to reclaim land from the sea and for the hatching of fish and crustaceans. Outside the enclosures, mollusks can be propagated in low tide areas. However, since there are large windblown waves there, numerous changes in the surface of the coastal sea, and a shortage of young fish varieties, the propagation area would not be great, and it would not be suitable as a major hatching area. In the coastal regions of some islands and islets, there is a lack of fresh water, with the result that the salinity of the ocean water is high. Such areas are suitable for the development of evaporation of ocean water to produce salt and for the raising of fish and shrimp, but not for reclamation of farmland.

Some comrades have proposed reclamation of land up to the high tide mark, claiming that such reclamation would not impair hatching. As to whether or not all coastal areas should be reclaimed up to the high tide mark will depend on the actual situation in each place. Some of the high tide marks in hatching areas are areas where the young of some species adhere. Once such areas have been enclosed, changes may occur in the underlying surface that would impair hatching. No further enclosures should be made in such coastal areas.

Facts have demonstrated that if it is not possible to protect natural advantages while making use of these natural advantages, the ecological balance may be destroyed and the usefulness of the natural advantages will be lost. Were the exchange of water flow in Leqing Bay to change because of the blocking of Xuanmen Port, and rapid silting occur within Xuanmen causing a great change in the ecological conditions within the bay, the qingzi [5808 1311] would not grow well. Once the islets across the Fang River in Leqing County had dams constructed between them, several thousand

mu of bases for the propagation of the young of species were damaged. The famous Yandang sweet fish [7159 5616 7449 7625] were no longer able to go to sea to spawn and propagate, so this resource has been destroyed, and an abrupt decline in the salinity of the river water was not beneficial for the growth of oysters. These examples cannot help but arouse people's concern and their demands that the leaders rapidly put a stop to further such occurrences or their extension as well as take steps to restore the balance of the ecology. Use of coastal oceans involves a fairly large number of sectors. A unified leadership organization is consequently needed to organize pertinent sectors to coordinate activities. Right now what is needed is for every sector acting under the leadership of a committee designated by provincial agriculture to do joint comprehensive prospecting work along the entire seacoast of the province and to use scientific data to make more perfect recommendations on the use of coastal areas.

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CSO: 4007

BRIEFS

LOWER QUALITY OF AGRICULTURAL CHEMICALS--When I traveled aroung a short time ago in the course of experiments on the effectiveness of farm chemicals, many people asked me whether farm pesticides were less effective than they should be and whether the quality of farm pesticides had declined. This is actually a misconception. Not only has the quality of farm pesticides not gone down, but on the contrary, there have been improvements in them. The main reasons for the decline in effectiveness of farm chemicals are, however, as follows: Insect pest resistance to the chemicals has increased. Just about all the plant protection personnel in production brigades know this. The most commonly used method of dealing with this resistance to chemicals and a method that is easy to apply is rotation of the kinds of pesticides used, or using a mixture of pesticides. Use of chemicals at the wrong time: Generally speaking, control of insect pests requires that action be taken before the san ling [0005 7881]. If preventive measures are taken after san ling, the resistance to chemicals of the insect pests will have increased and it will become quite difficult to control them. Use of chemicals of insufficiently high quality: Farm chemicals are generally sprayed in a mist, sprinkled, or broadcast on the soil. There are not many problems with the latter two methods in which chemicals are applied pretty much as needed. With the spraying of a mist, however, it is extremely difficult to assure chemical quality. In the case of DDVP and Malathion, which are put into liquid form preparatory to use as a mist, each mu usually requires spraying with about 120 jin. If less is used, spraying will either be insufficiently even or incomplete, thus impairing effectiveness in control. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 19 Aug 80 p 2] 9432

NINGBO IRRIGATION PROJECTS--Ningbo Prefecture, Zhejiang, has scored marked results in farmland water conservation projects. At present, the prefecture has 80 reservoirs with a storing capacity of over 1 million cubic meters each, and more than 1,400 small reservoirs. All the 28 main rivers and streams of the prefecture have been dredged and widened. With more than 16,000 pieces of irrigation and drainage equipment, the prefecture has brought 2.55 million mu of farmland under electrically powered and mechanical irrigation and drainage. In 1979, the prefecture's total grain output reached 3.07 billion jin. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 14 Sep 80 OW]

WINTER SOWING--Preparations for winter sowing are in full swing in Yuhang County of Zhejiang. As of late September the county had mapped out plans for growing 230,000 mu of spring grains and 138,000 mu of rape, an increase of 5,600 mu over last year. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

CITRUS PRODUCTION--Hangzhou, 27 Sep (XINHUA)--Qu County of Zhejiang Province is expected to produce some 190,000 dan of citrus fruits this year. A famous citrus-fruit-producing area, this county now has 40,000 mu of citrus trees, some 5 times more than the early post-liberation period. [Beijing XINHUA Domestic Service in Chinese 0211 GMT 27 Sep 80 OW]

CSO: 4007

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ORG: ZHANG of Fushan Agricultural School, Guangdong Province; LIU, QIU, CHEN and LIN all of the Isotope Laboratory, Department of Biology, Zhongshan University

TITLE: "Studies on the Distribution of Photosynthetic Products and the Absorption of Nitrogen Nutrients in Regenerative Rice by Using Isotopes ^{14}C and ^{15}N"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 1-5

TEXT OF ENGLISH ABSTRACT: This investigation provides evidence that the photosynthetic efficiency of the leaves of regenerative rice is much higher than that of early cropping rice, and the absorption ability of nitrogen nutrients is continuously raised from the sprouting to heading stages. Therefore, the field management of regenerative rice should be more important.

AUTHOR: LIU Zhenqi [0491 6297 3823]

ORG: Laboratory of Plant Physiology, Guizhou College of Agriculture

TITLE: "A Study on the Photosynthetic Characteristics of Different Plant Types of Rice"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 6-10

TEXT OF ENGLISH ABSTRACT: A series of experiments on 10 rice varieties of different plant types was carried out for two years. It was found that the economical coefficient of erect middle tall types is larger than that of the droopy-leaved tall type.

The difference of chlorophyll content among rice varieties and leaves at different positions was significant. Top leaves had a higher chlorophyll content and higher net photosynthetic rate, making a contrast to the lower leaves which had a lower chlorophyll content and a lower net photosynthetic rate. Chlorophyll content was positively correlated with the net photosynthetic rate ($r = 0.554$).

Rice varietal differences in the leaf area, net assimilation rate and

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 6-10]

assimilation capacity also existed. It was established that the correlation between leaf area and dry weight was still quite evident from the period of the recovery of growth to the time of heading ($r = 0.962$), and it also had an evident correlation between the photosynthetic potential and biological yield (in 1978 $r = 0.86$; in 1979 $r = 0.93$). The contribution of photosynthetic potential to yield was different under different environmental conditions, yet the contribution to yield per unit photosynthetic potential was nearly the same (regression coefficient $b = 54.51$ in 1978; $b = 60.16$ in 1979).

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TITLE: "The Correlation of Photosynthetic Characteristics with the Yield Characteristics in Wheat"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 11-15

TEXT OF ENGLISH ABSTRACT: A significant correlation between the photosynthetic characteristics and the yield characteristics was present in wheat. The correlation of the photosynthesis rate in the booting stage with the number of grains of the main spike indicated significance, with the correlation coefficient being 0.527. The correlation of the photosynthesis rate during anthesis with the weight of 1000 kernels was positive, with the correlation coefficient being 0.756 and the regression coefficient 0.956. The correlation between the photosynthesis rate in the milking stage and the weight of 1000 kernels was negative, with the correlation coefficient being 0.734 and the regression coefficient 93.7. The hybrids selected for their photosynthesis rate possess a

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 11-15]

higher correlation between the photosynthesis rate and the yield characteristics in their progenies, with the coefficient in F_3 raised to 0.811. The correlation of the photorespiration rate to the weight of 1000 kernels was significantly negative, with the correlation coefficient being 0.521. The correlations of the number of stomata to fresh weight per unit leaf area and the photosynthesis rate to the weight of 1000 kernels are identical.

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TITLE: "A Preliminary Study of Sorghum's Fertilizer Absorption"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 16-22

TEXT OF ENGLISH ABSTRACT: The results of a pot culture test indicated that sorghum appeared to have two peaks of absorption of fertilizers during the stages of jointing to heading and flowering to ripening. Nitrogen shortage from the early jointing stage had the greatest unfavorable effect on the growth and development of sorghum. When nitrogen was reduced in the seedling stage, the kernel weight (g/1000) was reduced and ripening delayed; therefore, it is of great importance to apply nitrogenous fertilizer before sowing and also during the jointing stage.

The critical period for phosphorous nutrients was in the seedling stage, which was the crucial moment for the application of phosphate fertilizer. During the stage of flowering to ripening, the greatest absorption existed and top dressing of phosphate fertilizer would produce beneficial effects on grain yields.

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Results of the experiments on the nutrient transference pattern within leaves during flowering to ripening stage and the tests of the various application dates of potash showed that top dressing of potash fertilizer at the time of flowering of sorghum might contribute greatly to its ripening as well as to its yield.

The characteristics of the absorption of fertilizers of the two varieties seemed no different from each other, but the sorghum hybrids showed a higher fertilizer absorbability than did the ordinary one, especially in the absorption of phosphate fertilizer.

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TITLE: "Studies on the Performance of Dwarf Stocks of Apple Trees"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 23-26

TEXT OF ENGLISH ABSTRACT: To ascertain the influence of dwarf stocks on the growth and fruiting of apple trees, a comparative experiment on stocks was conducted from 1968 to 1978 by grafting the "Starkrimson" apple trees on self-root stocks and intermediate stocks of M2, M4, M7 and M9, with Malus baccata stock as a check. The results were as follows:

1. Apple trees of dwarf intermediate stock had larger bodies than did those of the same varieties grafted on self-root stock. They could adapt to a wide range of soils, set more fruits, and overcome the defects of self-root stock in poor root systems and propagation, thus meeting requirements of planting fruit trees in mountain areas and on riverside banks.
2. Both the dwarf stock and the self-root stock apple trees had the characteristics of early fruiting, high yields, fine quality, as well as small tree size, which suited close planting, mechanical operation and renewal of trees. Among the stocks tested, M9 used as an intermediate stock was the best one.

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 23-26]

3. The important factors of early maturity, high and stable yields for dwarf stock apple trees were attributed to their slower vegetative growth when compared to standard stock apple trees, short branches, more axillary branches, high efficiency of photosynthesis and the capacity of continually bearing fruits.

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TITLE: "A Preliminary Study on the Male Sterility Produced by Hybridization between Triticum compactum and Triticum aestivum"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 27-33

TEXT OF ENGLISH ABSTRACT: By reciprocal crosses between Triticum compactum and Triticum aestivum, it was possible to segregate 2-3 percent complete male sterile plants in F_2. Triticum compactum was used as the female plant and crossed

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 27-33]

by male plants of Triticum aestivum--"Zhongyin" No 2 and 755095. By backcrossing these two hybrids with their male parent, we obtained a new male sterile type with stable sterility (now named "Mi-Pu-type" male sterile line). In a few testcross combinations we found some restorer materials, such as F49-70, etc.

According to the probability of producing sterility and hereditary behavior, the Mi-Pu-type was remarkably different from the T-type male sterile line. Therefore, the cytoplasm of Triticum compactum may be considered the new type of cytoplasm from which sterility arises. This male sterile line obtained by crosses of the lines of closely-related breeds of Triticum aestivum may produce more restorer lines than will the T-type male sterile lines, and it will be easier to obtain more hybrid combinations of more vigorous heterosis to promote wheat production.

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TITLE: "Genetic Analysis of the Mediate Type Self-Bred Pop-Flint Corn"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 34-40

TEXT OF ENGLISH ABSTRACT: The genetic features of some main characteristics of the mediate type pop-flint corn, such as the number of ears per plant, 1000 grain weight, combining ability and grain type, etc., were analyzed. The phenotype correlation of the hybrids' major characteristics in plot yield were also analyzed.

It is considered that the selection of the self-bred lines of the mediate type is very promising as a new way of gaining a corn hybrid possessing multi-ears (or two ears) per plant with high yield and of good quality. By self- and testcrossing on the same plant in the early generation, it may raise the accuracy in self-bred selection and shorten the breeding time.

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The proper proportion of the characteristics of the two adopted subspecies is a key to the selection of self-bred lines. More attention must also be paid to the complement of the parents' characteristics in selecting and pairing hybridized combinations.

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TITLE: "Studies on Fusarium Wilt Resistance of the Cultivar Resources of Cotton"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 41-46

TEXT OF ENGLISH ABSTRACT: In order to evaluate cotton's resistance to fusarium wilt, 3,710 samples from the national cotton resource collections, including Gossypium barbadense (278), G. hirsutum (3102), G. arboreum (308), G. herbaceum (5), and Gossypium sp. (17), were inoculated with Fusarium oxysporum f. sp. vasinfectum. Twenty-three of the samples were immune (0.62 percent), 164 were highly resistant (4.42 percent), 187 resistant (5.04 percent), 351 tolerant (9.46 percent) and 2,985 susceptible (80.46 percent) to the wilt pathogen inoculated. Generally, G. arboreum may be ranked as the most resistant, G. hirsutum as moderately susceptible and G. barbadense highly susceptible. Some

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G. hirsutum cultivars, such as 52-128 and 57-681, had been adopted as the source of resistance in the breeding of resistant varieties. These cultivars were selected from the naturally infested fields and remained highly resistant and stable for decades since their deliverance. Most of the G. arboreum collections were the domestic varieties from the Changjiang Valley. None of the G. barbadense collections were qualified as resistant sources against fusarium wilt. Seedling resistance was proved to coincide with the resistance from the flowering stage.

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TITLE: "Preliminary Investigation of the Differences of the Compositional Changes of Fat and Fatty Acids in Developing Rape Seeds"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 47-51

TEXT OF ENGLISH ABSTRACT: The changes of dry matter and fat accumulation in developing rape seeds followed a sigmoid pattern. The chlorophyll constituent was present throughout development, and the relationship between oils and chlorophyll content strongly indicated that the chlorophyll might play an important role in the oil formation. The composition of oils and fatty acids had an obvious phasic change in developing rape seeds.

According to the change of the chemical constituents of rape seeds, seed development might be divided into three phases. Fat formation was mainly accomplished in the mid-phase. In the oil accumulation rate of a developing embryo, the high oil content varieties were higher than were the low oil content ones. In the accumulation rate of erucic acid, the high erucic acid

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varieties were higher than were the low erucic acid ones, but in the accumulation rate of oleic acid this situation was reversed.

The data of this report pointed out that the correlation between oleic acid and erucic acid was obviously negative. The differences in the accumulation rate of fat and fatty acids in different varieties of developing rape seeds showed the differences in the genetic bases of different rape varieties.

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TITLE: "A Preliminary Study on the Combining Ability of Some Quantitative Characteristics in Autumn Cucumber"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 52-57

TEXT OF ENGLISH ABSTRACT: The combining abilities of the flowering period, mature period and yield, etc., in autumn cucumber crosses were analyzed, and the results showed that the variation in these characteristics behaved similarly in the following aspects: (1) Both general and specific combining ability effects were statistically highly significant indicating real differences among parental lines; (2) Lines 24-3-22-2 and 3-6-11-13-3-9 manifested significantly greater combining ability than did the others; (3) Additive variance predominated in the phenotypic variation while the non-additive portion was somewhat remarkable; (4) The estimates of heritability were between 40 and 50 percent, except those of mean weight of single fruit which had a relatively low value.

AUTHOR: None

ORG: National Cooperative Network of Forecast for Brown Planthopper

TITLE: "The Occurrence of the Brown Planthopper and Its Forecast in China"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 58-64

TEXT OF ENGLISH ABSTRACT: The brown planthopper (Nilaparvata lugens) is a pest of specific feeding habits, low cold tolerance, and with a characteristic of long distance migration. In the year-round rice-growing area south of 19°N latitude, the brown planthopper could continually reproduce, the source of the first population mainly occurring in that same area. In the area between 19 and 25°N latitude the brown planthopper could overwinter on regenerative rice, wild rice and natural grown rice from the shedding grain in various life stages, but there were very few of these planthoppers and the source of their first infestation came mainly from other places. In the area north of 25°N latitude the brown planthopper could not overwinter in any life stage, and the insect source was entirely due to migration from the rice area in the south.

Based on the characteristics of the brown planthopper mentioned above, a nation-wide network of investigation and forecast for the brown planthopper was

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set up in 1977. It has been proved by practice that this measurement can not only ascertain the law of the occurrence of the brown planthopper, but can also effectively guide a short-term forecast and make it possible to wage pest control in a large area, accumulating a large amount of data for further investigation on the law of seasonal migration of the brown planthopper in China.

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TITLE: "Studies on the Occurrence of Wheat Rosette Stunt and Its Integrated Control"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 65-71

TEXT OF ENGLISH ABSTRACT: In recent years wheat rosette stunt has been seriously spreading over most parts of Hebei Province. The most conspicuous symptoms of this disease are yellow and green variegated narrow stripes on the upper leaves accompanied by more abundant tillers and the stunted plant.

Through electron microscopic observation it was demonstrated that the pathogen of wheat rosette stunt is a rhabdoid virus. The planthopper (Laodelphax striatellus fallen) is the vector of this virus which is not soil and seed borne nor transmitted mechanically. Tests with aphids and leafhoppers did not give any sign as to their being responsible for virus transmission.

Successive field observations have noted that the peak time of the disease

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occurs in autumn, which is positively correlated with the time of sowing. In spring, two disease peaks exist. They are caused separately by the latent infection in autumn and the infection in early spring. Inoculation tests at various plant growth stages have demonstrated that the infection occurring at the seedling stage of wheat in winter or early spring would cause great damage to the wheat, while infection occurring at the stem extension stage would cause less damage, and no effect could be produced if the infection occurred at the booting stage.

The vector Laodelphax striatellus fallen produces five generations a year in the middle and southern parts of Hebei Province. The adults of the fourth generation in autumn and the overwintering nymphae in spring are the principal vectors which transmit the virus and cause damage to the wheat in winter fields.

Practical experience in the past years has provided evidence that integrated programs, laying special emphasis on agricultural management and supplemented by the spraying of insecticides, represented a considerable success in disease control. The integrated programs mainly involved: (1) deep plowing and eradicating the grasses in large areas before sowing for the purpose of reducing the amount of sources of vectors and viruses; (2) not intercropping winter wheat

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with cotton and other autumn harvested crops; (3) sowing winter wheat at the optimum time and not too early; (4) spraying insecticides according to the information about the vector and other considerations.

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TITLE: "Causes of and Solutions to Reduced Stripe Rust Resistance in Chinese Wheat Varieties"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 72-77

TEXT OF ENGLISH ABSTRACT: This paper briefly describes the origin and development of the variation of wheat variety resistance to stripe rust, summarizing the successes and progress in research on the cause of and solutions to the problem in China and abroad. A preliminary analysis is given of the cause of the stripe rust resistance in Chinese wheat varieties, suggesting at the same time that the variation of pathogenicity of physiological races of rust is the main cause and that the effect of self-variation of wheat varieties and environmental conditions play a role as well. We are also of the opinion that the cold western regions where the stripe rust may pass the winter as well as the summer, such as the south of Gansu Province and the west of Sichuan Province, are places where variations in stripe rust resistance in wheat varieties are apt to occur, and that some early sowing regions of winter wheat, such as the eastern part of

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Gansu Province, have a "bridge" effect on the dissemination of urediospores of new physiological races of wheat stripe rust from west to east. This paper also points out ways and strategies of control based on the specialities of various wheat variety resistances to stripe rust in China.

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TITLE: "Studies on the Control of the Northern Corn Leaf Blight"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 78-84

TEXT OF ENGLISH ABSTRACT: The northern leaf blight of corn is caused by the fungus Exserohilum turcicum (Pass.) Leonard et Suggs. It occurs mainly in the spring corn areas of northern and southern China and may cause a reduction of yield of 20 percent in the heavily diseased areas, and even as high as 30-50 percent in some severely infected fields.

The results of five years of experiments showed that the mycelium of the pathogen overwintered in the field infected plant and produced new conidia which spread through the air in the second year. The results also showed that the germination rate of the overwintering conidia is low.

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The disease epidemic in the fields may be divided into three stages, i.e., occurrence, infestation and injury. The number of rainy days and the amount of rain in June, July and August are the main factors affecting the occurrence and degree of epidemic of the disease, and may be taken as scales for middle- and long-term forecasting.

More than 1000 corn inbreds and varieties were tested for their disease resistance in seven years. Many of them with the lesion number form of resistance expressed anti-infection. About 200 isolates of the fungus collected from different parts of China were tested, with results showing that all isolates avirulent to plants having gene Ht_1 and Ht_2 and expressing chlorotic-lesion forms of resistance might be the race 1 (US1) of Exserohilum turcicum.

Utilization of resistant varieties along with an integrated control method can protect corn from the damage of this disease.

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TITLE: "Estimation of the Gene Frequency of the Simmental Horn Characteristic in the Chinese Sanhe Cattle Population and Its Application"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 85-90

TEXT OF ENGLISH ABSTRACT: The Chinese Sanhe cattle originated in northeast China. As a result of the cross breeding of Mongolian cattle with the Simmental, Friesian, etc., today some Simmental characteristics exist in Sanhe cattle, one of them being the horn characteristic. By the estimation of the gene frequency and genotype frequency of the Simmental horn characteristic in

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Simmental X Sanhe cattle F_1, and making a comparison with the data of the genotype frequency obtained previously (1962-1965) in the Sanhe region, it is suggested that the Simmental horn characteristic may be controlled by a recessive gene with multiple alleles. According to the Hardy-Weinberg law, this recessive gene frequency q in the Sanhe population was calculated as 0.1900 and the genotype frequency Q, 0.4358. In the F_1 hybrid, it was 0.5153 for q and 0.7179 for Q, and in the F_2 population q is 0.8590 and Q is 0.9268. In combination with the other inherited characteristics, such as white face, coat color, composition and muscularity in rear quarters, the horn characteristic gene frequency would be useful in the estimation of the effectiveness of cross breeding the Simmental with Sanhe cattle. The grading system would be the best means by which a Chinese Simmental breed could be built.

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TITLE: "Paper Electrophoresis of the Serum Protein Constituent of Healthy Horses and Horses Infected with EIA (Infectious Anemia of Horses)"

SOURCE: Peijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 91-94

TEXT OF ENGLISH ABSTRACT: This article analyzed the serum protein constituent of normal horses in 25 cases and 31 cases of horses infected with infectious anemia by means of paper electrophoresis. The serum protein constituents of normal horses are: albumin 33.52 $\pm$ 3.04, α-globulin 18.24 $\pm$ 2.08, β-globulin 23.11 $\pm$ 3.85, γ-globulin 25.13 $\pm$ 4.00, and the comparison of albumin with globulin (A/G) is 0.504 $\pm$ 0.053. The serum protein constituents of horses infected with EIA are: albumin 25.07 $\pm$ 3.24, α-globulin 19.18 $\pm$ 4.19, β-globulin 24.30 $\pm$ 3.74, γ-globulin 31.45 $\pm$ 6.45, and the comparison of the proportion of albumin to globulin dropped to 0.334 $\pm$ 0.009. In comparison with that of the normal horses, it was shown that the albumin of horses infected with EIA diminished relatively, γ-globulin increased conspicuously, and α-globulin and

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β-globulin increased a little. During the initial stage the constituents of the serum protein in horses infected with EIA changed only slightly, while in the late stage they changed obviously.

This research proved that paper electrophoresis of the serum protein constituents of horses is instrumental in diagnosing EIA and investigating its pathogenesis.

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TITLE: "Some Numerical Experiments of Geostrophic Adjustment"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 97-105

TEXT OF ENGLISH ABSTRACT: Some aspects of geostrophic adjustment are investigated by numerical experiments with nonlinear barotropic primitive equations in the hemispheric area. The results are in good agreement with those obtained previously by both the linear and nonlinear theories. The characteristic time required for the adjustment process as well as the other quantitative data are given. The problem of four-dimensional assimilation is also discussed, indicating that it would not be of benefit if the updating is made only in the pressure field without treatment of the wind field.

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TITLE: "Some Fundamental Thermodynamic Properties of the Saturated Moist Air"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 106-110

TEXT OF ENGLISH ABSTRACT: Considering the condensation process at the initial stage as a generalized adiabatic process and the latent heat of condensation as an inseparable part of the total potential energy of a closed system, we have studied the fundamental thermodynamic properties of the saturated moist air. The results show that all the properties of the dry air could be retained in the saturated moist air, provided the air temperature T is replaced by the so-called generalized temperature T* as an independent variable.

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TITLE: "The Oscillation of Certain Zonal Mean Characteristics of Atmospheric Motion"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 111-121

TEXT OF ENGLISH ABSTRACT: In this paper the high nonlinear atmospheric motion is considered as a kind of semi- or quasi-eddy motion. By introducing the method of quasi-eddy approximations, i.e., conserving the eddy terms at the beginning and then ignoring some of them after integrating the equations along the latitude circle, the oscillation equations of certain characteristics of atmospheric motion, such as zonal index, zonal mean meridianal transport of momentum and vorticity, etc., and their harmonic solutions are obtained. The period of oscillation depends on $\overline{V}^2$, a measure of the zonal mean meridianal kinetic energy. The period of the first harmonic is about 20 days.

The results may explain to some extent the oscillation of certain zonal mean characteristics of the observed atmospheric motion and the vacillation of experimental simulation.

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The main scientific purpose of this paper is to demonstrate that even the high nonlinear extended atmospheric processes might also be attacked by linear theory.

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TITLE: "A Method of Initialization of the Primitive Equation Model Including Real Wind and Height Data"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 122-129

TEXT OF ENGLISH ABSTRACT: A method is presented for initialization of the primitive equation model including real wind and height data. Vertical mean mass divergence is set to zero as a kinematic constraint for eliminating the extra-gravity wave in the initial wind field. Errors in the real wind are altered by assuming that they affect only the divergence part of the flow. The three-dimensional consistent array of velocity components and the height are used as the initial value of the model. The numerical results appear to be better than the balance approximation. This procedure is more effective for the initializing of the sub-synoptic circulation system.

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TITLE: "A Primitive Equation Numerical Model Including Orography and Non-adiabatic Heating"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 130-141

TEXT OF ENGLISH ABSTRACT: In order to simulate the large-scale dynamic process and improve the numerical weather prediction, a primitive equation hemispherical model is developed.

Characteristic features of the model are as follows: The thermodynamic equation is given. The difference schemes of the model preserve total energy but the difference schemes of the pressure gradient and hydrostatic relation have no constraints. The physical factors of orography, friction, horizontal diffusion, large-scale precipitation, evaporation and various non-adiabatic heating are

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included. The radiational heating and cooling is designed to be evaluated directly from the differential expressions given, and the ground temperature is calculated from the solution given without iteration.

The model was tested to give an example of a 48-hour prediction.

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TITLE: "A Case Study of a Shear Line Producing Heavy Rainfall on the Qinghai-Xizang Plateau"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 142-149

TEXT OF ENGLISH ABSTRACT: In this paper the three-dimensional structure of a shear line producing heavy rainfall on the Qinghai-Xizang Plateau is analyzed. This analysis discloses the existence of a southerly jet in the middle troposphere which has a close relationship to the heavy rainfall.

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TITLE: "Estimation of Tropical Cyclone Intensity by Use of GMS Infrared Imagery"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 150-159

TEXT OF ENGLISH ABSTRACT: Using GMS infrared imagery we have summarized four cloud characteristics relative to the intensity of tropical cyclones as follows: the position of the circulation center relative to the deep convective cloud; the characteristics of the eye's form and its size and the degree of clearness in the eye; the characteristics of the central deep convective cloud; and the characteristics of the spiral cloud band. To each characteristic we assigned an index of tropical cyclone intensity. Synthesizing these four indices we obtained a T number characterizing the intensity of the cyclone. We correlated the T number with the central maximum wind speed of tropical

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cyclones and obtained the empirical formula $V_{max} = 7.813(T-1)$. It is found that we can estimate the maximum wind speed of the tropical cyclone using the GMS data.

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TITLE: "A Model of the Distribution of Turbulent Intensity over Shanghai"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 160-164

TEXT OF ENGLISH ABSTRACT: This paper presents a model of the distribution of turbulent intensity over Shanghai. We deduced the turbulence from the mean temperature, pressure and wind fields and also made use of some data of the quivering of star images in deducing these results.

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TITLE: "A Study of the Amount of Evaporation and the Loss of Heat for Evaporation in China"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 165-176

TEXT OF ENGLISH ABSTRACT: In this paper the following problems are discussed:
1) The various methods used to calculate the amount of evaporation.
2) Results of the calculation of the amount of evaporation and the loss of heat for evaporation of more than 200 stations in China by N. A. Bagrov's method based on the component values of radiation and heat balance given by the authors and other related climatological data.
3) The configuration of the time and space distributions of the amount of evaporation and the loss of heat for evaporation in China.

AUTHOR: ZHOU Keqian [0719 0344 0467]

ORG: Institute of Geography, Henan

TITLE: "A Method for Estimating the Evaporation in which the Wasting Heat of Rainwater is Considered"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 177-181

TEXT OF ENGLISH ABSTRACT: The wasting heat of rainwater is considered, and we have obtained the following formula for estimating the diurnal evaporation

$$E=\frac{\Delta R_n+0.5E_a\left(1+\frac{I_d}{190}\right)}{\Delta+0.5\left(1+\frac{I_d}{190}\right)}$$

where I_d is the daily rainfall (mm). The calculations show that this formula is more accurate than Penmen's formula when the rainfall is heavy.

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END

JPRS 76679

23 October 1980

China Report

AGRICULTURE

No. 107

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23 October 1980

CHINA REPORT

AGRICULTURE

No. 107

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I. GENERAL INFORMATION

POPULARIZATION OF AGRO-TECHNIQUES DISCUSSED

HK100806 Beijing RENMIN RIBAO in Chinese 4 Oct 80 p 1

[Editorial: "Greater Efforts Should Be Made To Popularize Agro-Techniques"]

[Text] The key to achieving agricultural modernization is the modernization of agro-sciences and techniques. Greater efforts should be made to tap the potential of scientists and technicians in order to popularize scientific and technical research results on a still wider scale and to push forward China's agricultural modernization at a faster pace in accordance with the actual conditions of China's agriculture at present.

In order to strive for higher farm output, we must rely on policies and science. Relying on science means that we must utilize our scientific and technical forces to promote a sustained growth in agricultural production. Popularization of agro-techniques represents a major link in agricultural science and technology. Only by means of popularization can the research results of agricultural science and technology become a productive force directly serving the needs of promoting agricultural production. We have popularized certain numbers of agricultural scientific research results over the past 30 years since the founding of our country, and which have helped enormously to promote the production of grain, economic crops and animal husbandry in our country. Wheat rust, for instance, used to be a major menace to China's wheat production. But due to the hard work of scientists who figured out the law governing the dissemination of wheat rust and developed and popularized a high-yield and rust-resistant strain, as well as the promotion of a consolidated prevention and control method, wheat rust has, in the main, been brought under control in the major wheat-producting areas in north and northwest China since 1965. To cite another case, in 1973, we succeeded in cross breeding non-glutinous rice. In 1979, this was popularized over an area of more than 75 million mu. Average production per mu of this variety is usually 100 to 150 jin more than those of ordinary varieties.

The 10 years of chaos had not only dealt a telling blow to our agricultural scientific research work but also seriously destroyed the

popularization of agro-techniques in our country. The research and popularization of agro-techniques still remains as a weak link today. If this state of affairs is not rapidly changed, it will become a major obstacle to the progress of agricultural modernization. According to statistics compiled by the 1977 national science conference, there were some 3,000 fairly important research results in the field of agricultural science and technology since nationwide liberation, and an additional 1,000 research projects have been completed in the past 2 years. But only a small portion has been popularized and extensively applied, and the remaining large portion has not yet been popularized and applied. The losses are beyond estimation. As long as we conscientiously popularize the existing scientific research results, a direct impetus can be created to promote the development of current agricultural production.

Some of our leading comrades do not fully understand the importance and complicated nature of agro-techniques popularization. They either stick to conventions and pay inadequate attention to studying and promoting new techniques, or adopt administrative measures to give orders and arbitrary directions. There are many lessons in this aspect. For instance, leading comrades in a certain locality stubbornly refused to heed the correct suggestions of the technicians and blindly introduced diseased cotton seeds from other places. This resulted in the spread of the disease, a problem which they feel totally helpless in solving. Agricultural production has a strong regional character. The scientific-technical research results in one area may not be suitable to other areas. Therefore, in popularizing the research results of agricultural science and technology, it is essential to proceed from the natural conditions and social economic conditions of different places, and promote them through experiments and demonstrations in accordance with the principle of adaptation to actual local conditions.

Popularization of agro-techniques represents in itself a branch of science. The leading cadres at all levels must earnestly study agricultural science and change themselves from nonprofessionals into professsionals as soon as possible. Meanwhile, efforts should also be made to boldly promote the outstanding agro-technical cadres to leading posts so as to gradually transform the structure of the existing ranks of agricultural cadres.

Before the "Great Cultural Revolution," most counties in our country had a agro-techniques populatization station. Although they were not perfect, they did a lot of work. During the 10 years of chaos, Lin Biao, the "gang of four" and their kind shouted ultraleftist slogans like "open-door scientific research," "occupation of the positions of science and technology by the poor and lower middle peasants" and "workers, peasants and soldiers are the main force in scientific research," which negated the role of the contingent of professional scientific researchers as the backbone in this undertaking, and did many things which were just

formalistic agro-techniques popularization stations. This is the main reason why popularization work has been weak all these years. At present, we must seriously study the readjustment of the system of agricultural science-research and agro-techniques popularization. County level organizations must take popularization as their main task, integrate experiments, demonstrations, popularization and technical training, strengthen agro-techniques popularization work at the commune and brigade levels and gradually establish a system of agro-techniques popularization running from top to bottom.

We must build a large contingent of cadres to be in charge of agro-techniques popularization. This will be an indispensable force in achieving agricultural modernization. To build such a contingent, we must have guarantees in the form of policies. At present, we have more than 100,000 cadres in charge of agro-techniques popularization in our country. They continuously fight at the frontline of agricultural production, doing tenuous work. They have gained great achievements. However, in many places, they are asked to perform sundry tasks or assigned to administrative work. Many agro-techniques popularization cadres still live under very poor living conditions after working for more than 10 to 20 years. This situation greatly affects the stability and growth of this contingent. Leadership at all levels must attach importance to and care for this contingent, allow the dispersed agro-techniques popularization cadres to return to their original posts, promptly classify their technical positions according to regulations and gradually improve their working and living conditions. Commendations and rewards must be given to those who have made outstanding contributions.

Doing the job of agro-techniques popularization well is an important task of the agricultural departments. Comrades in those departments must ask themselves these questions: Have you attacked adequate importance to popularization work? What are the agro-techniques that have been proven to be effective which you have not popularized in your locality? What are the scientific and technological potentials which can still be tapped? Rules and plans must be drawn up, measures must be enforced and plans must be implemented. There should be close coordination and cooperation among agricultural science research units, agricultural colleges and agro-techniques popularization departments to join efforts in doing a good job in agro-techniques popularization.

CSO: 4007

PROBLEMS IN SELECTIVE BREEDING RESEARCH OUTLINED

Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 10 Jun 80 pp 60-62

[Article by Lei Jiecheng [7191 2212 2052] of the Rice and Wheat Research Institute of the Fujian Provincial Agricultural Science Academy: "Trends in Research in and Application of Heterosis in Agricultural Crops"]

[Excerpts] From 21 to 27 October 1979, the Chinese Crops Society and the Chinese Cotton Society jointly sponsored a "National Academic Discussion Conference on the Utilization of Heterosis in Agricultural Crops" in Wuhan. The conference proceeded according to the policy of "let a hundred flowers bloom and a hundred schools of thought contend" to exchange information and discuss the topic. The conference confirmed the achievements in the utilization of heterosis in agricultural crops and also discussed existing problems and proposed hypotheses. The academic questions and the research trends discussed at the conference are described according to crops in the following:

(1) Selective Breeding of the Three Lines:

1. General Academic Thought

One viewpoint holds that the potential of yield of the presently available combinations is great but some shortcomings still exist. Aimed at these shortcomings, different emphasis should be grasped in different provinces (cities). The presently available three lines can be improved and changed. For example, the present combination of the restorer line of IR24 etc are better varieties of the 1970's, while the sterile free line is a variety of the 1960's in our nation. Therefore, selective breeding of the sterile free line not only can achieve success in improving resistance and yield but can also achieve success in raising the yield of seed propagation and reducing cost. The stability of yield of the presently available combinations can be increased simply by increasing the resistance of the restorer line. Another viewpoint holds that to realize a new breakthrough in hybrid paddy rice, the pedigree of both parents must be expanded, for example, using xian and geng heterosis and using the offspring of hybrids among genera as materials for the three

lines. The Guangxi Agricultural Academy used the yellow shell you zhan X ba mang and cultivated a peripheral restorer line that produces 500 to 600 grains per panicle and which has very good restoring characteristics.

2. Actual Problems in the Selective Breeding of the Three Lines

(a) Sterile Line

At present, the southern provinces are still using mainly the wild and the degenerate types. In the north, BT is mainly used. To diversify the combinations, the selective breeding of sterile lines of new materials and sources must be emphasized. For example, the geng type sterile line has already demonstrated its superior qualities in large area applications of heterosis, restoring ability, adaptability, and the concentration of the flowering time of the sterile line.

(b) Selective Breeding of the Sterile Free Line

At present, the sterile free lines are the varieties of the 1960's. The several good sterile free lines of zhen shan, Wei 41, Wei 20 are very closely related. It has been discovered in test crossing that varieties that will serve as good sterile free lines are few. This indicates the importance of this work. On the other hand, after several years of test crossing and rotational breeding, materials and experience have also been provided for the cultivation of sterile free lines.

(c) Selective Breeding of Restorer Lines

In the selective combination of early maturing combinations, the selective breeding of restorer lines is very important. Early maturing restorer lines presently being used in production are still Gu 154, 6185, IR28 75P-12 and Lian 24. But all of these restorer lines still have shortcomings. Therefore, they cannot be used daringly. According to studies conducted in Hunan, the Tan yin zao xian A X gu 154 hybrid matures early and resists yellow withering disease. It is being popularized as a demonstration at present. In the past, newly selected combinations mature early but are not superior mainly because under lower temperatures in spring, they do not tiller a lot. Therefore, selective breeding of early maturing restorer lines must emphasize strong tillering to achieve early maturation and high yields.

Selective breeding of restorer lines must utilize even more restorer sources. Besides the presently available wild and degenerate restorer source Peta (IR24, IR661, IR26), the function of Indonesian ai he, southern China's wild rice, yun II 21 of the Yunan and Guizhou Plateau, Shaanxi's hei gu must be further developed. More attention must also be paid to discovering new restorer sources to selectively breed more varieties and more kinds of restorer lines.

(2) Cultivation of Hybrid Paddy Rice

Research conducted by the head of the Guangdong Lianshan County Agricultural Science Institute Luo Qicong [5012 2601 5115] revealed that the daily yield of grains of hybrid paddy rice is between 8 and 10 jin, while the ordinary varieties yield between 6 and 8 jin. The yield of rice grains of hybrid rice for every 1°C of effective cumulative temperature is also higher than ordinary varieties. The yield of grains of early season wei you No 3 for each 1°C of effective cumulative temperature is 0.85 jin, and that of zhen zhu ai is 0.72 jin. The yield of grains of late season wei you No 6 for each 1°C of effective cumulative temperature is 0.73 jin, and that for ping guang xuan No 2 is 0.46 jin. Hybrid rice is more economical than ordinary varieties in the use of fertilizers under a high level of fertilization, each jin of pure ammonia produces 37.5 jin of grains while ordinary varieties only produce 30.4 jin.

To make hybrid rice produce a higher yield, research by the Guangdong Lianshan County Agricultural Science Institute, the Xuzhou Regional Institute, and the Rice and Wheat Institute of the Fujian Agricultural Science Academy indicates that the following points must be grasped: (1) Reasonable sowing times and transplanting times should be maintained to assure paddy rice will head, fill, mature under appropriate temperature conditions and sufficient sunlight. Special emphasis should be placed on the sufficiency of sunlight within 4 weeks after hearing. (2) There must be high-yielding soil. High-yielding soil can effectively regulate the conflicts among water, fertilizers and aeration. Regulation by the soil itself is frequently more effective than artificial regulation. (3) Reasonable colony structure. For example, it is believed that cultivation of nan you should be 60,000 to 70,000 seedlings per mu, 20,000 batches of plants, with 300,000 tillers as the highest number and between 180,000 and 200,000 panicles. The leaf surface index 30 days after transplanting is 2.5, the period of differentiation should be at 4.5, the heading time should be at 7 to 8, the yellow ripe period should be at 4 to 4.5. The growth curve of the rice seedling should be shaped like a Chinese bun, not peaked. This kind of morphological indicators are more suitable. Overly prosperous growth during the early period is not beneficial to the formation of panicles. Overly prosperous growth during the latter period is not beneficial to fruiting. But in large area production, the problem is still an insufficiency in the number of seedlings and the number of panicles.

(3) Coupling Strength of Economic Characteristics

The Guangxi Agricultural Science Academy combined varieties with vastly different panicle characteristics. It is believed that the several factors of the number of panicles, the number of grains, the weight of grains, and the fruiting percentage mutually supplement each other and mutually limit each other. Large panicles and large grains supplement

each other but limit the number of panicles. Abundance of panicles and large grains supplement each other but limit formation of large panicles. Large panicles and an abundance of panicles supplement each other but to a certain degree limit the increase in the thousand grain weight. These combinations all showed a reduced fruiting percentage. Among these characteristics, the relationship between the number of panicles and the yield of the single plant is the closest.

(4) Genetic Theory of Sterility and Restoration

The Hunan Agricultural Science Academy used F1 and F2 in test crosses to study the sterile line and concluded that the restoration of the sterile line of wild and degenerate varieties is controlled by a pair of genes which are independently inherited. Pure combination showed (FF). The Biology Department of the Beijing University used the method of colony genetics to calculate hybrid materials and concluded:

The cell nuclei of the sterile line of the wild and degenerate geng type have two pairs of major stable genes ms 1 and ms 2. The restorer line has two pairs of dominant restorer genes ms 1 and ms 2. The third theory is that some varieties do not possess fixed and invariable sterile cytoplasmic genes and fertile genes in the cell nuclei. Some other varieties do not have fixed and invariable sterile genes in the cell nuclei and fertile cytoplasmic genes. Sterility is produced by physical uncoordination between the original cytoplasm and the foreign chromosome group. When they are well coordinated, sterility will be restored.

The Guangdong Coordination and Cooperation Group conducted research in the relationship between environmental conditions and the degree of manifestation of restoration and sterility. It was believed that restoration of the fertility of the sterile line is controlled by the three factors of environmental conditions, the restorability of the sterile line and the capability of restoration of the restorer line. Of these, the restorer line exerts the major function while the other two factors should not be neglected.

Wheat

Utilization of Heterosis of Wheat

At present, there are at least over 20 nations in the world that have launched theoretical studies and studies in application. The United States, Japan and the Soviet Union have conducted rotational breeding and selective breeding of sterile lines on a massive scale. They have all obtained many sterile lines. In recent years, some new restorer lines have been cultivated.

Our nation's research in hybridization of wheat has produced sets of "the three lines." The sterile lines are: Heilongjiang's "ke feng No 1"; Shanxi's wei dong No 7, tong 404; Shandong's Taoshan No 1, Taishan No 4,; Chejiang's 908; Anhui's No 11; Henan's Zhengying No 1;

Ningxia's hong tu; Beijing Agricultural University's 139. The method of selection was used to selectively breed such restorer lines as "yuan xuan hao" during the process of extracting 808. The method of hybrid breeding was used to successfully breed a batch of restorer lines with better restoring strength, such as Hebei's 7269-10, 72130-8-11; Chejiang's R-124; Shanxi's 5231; Heilongjiang's 73-1072, the yuan hui No 1 and yuan hui No 2 of the Chinese Academy of Agricultural Sciences.

Utilization of heterosis of wheat is regarded differently in our nation and abroad at present. Some scholars believe hybrid wheat varieties are superior but not strong and hybridization of wheat is not necessary. This conference still confirmed the necessity of heterosis and confirmed the practical value of extracting sterile lines. The weak superiority of the present combinations is due to scarcity of the restorer lines of sterile lines of this type (extracted type), therefore the combinations are few. It is difficult to breed strongly superior combinations when the original combinations are few. In general, the research in hybridization of wheat is still at the trial stage.

Sorghum

Hybrid sorghum once developed rapidly. In recent years, the area has reduced mainly because of poor quality. Studies are now centered around raising the quality and remarkable achievements have already been made. A batch of high yielding and new combinations of superior quality such as jin za No 1, bo za No 1, No 3, tang ge No 9, jin za No 9 have already been used in production.

Corn

Utilization of heterosis of corn has developed rather early in our nation and abroad. A relatively complete system has already been formed in theory and greater achievements have also been made in practice. Each province has selectively bred a group of superior hybrids. At present, our nation's scientific research workers who study corn share a popular feeling that after passing through selection of lines among varieties resulting from natural pollination and after using two-cycle lines, the difficulty of selectively breeding even more superior inbred lines using presently available domestic and foreign sources is increasing day by day. There has not been any big breakthroughs in recent years. Also, damage to corn due to disease has become more and more severe and damage due to disease has become the major factor that dictates the stability of corn production in our nation. Research in raising the level of yield of the selected lines and resistance to many types of diseases are not only the key question in the present utilization of heterosis but are also the direction of our efforts for a long period in the future.

To improve the yield which is a characteristic of multiple genes, and to increase multiple resistance to diseases, the road of improvement of the colony should be followed. Our nation's work in breeding corn at present has already entered a new phase of improvement of the colony.

Cotton

India was the first to apply heterosis of cotton on a large scale in production. In 1977, it reached 2 million mu, average per mu yield of ginned cotton was 107 jin, and recently it reached 313 jin, 1 to 2 times more in yield than the ordinary popular varieties. Hybrid varieties also manifest resistance to diseases and insects, good quality of fiber, and a capacity for weaving into 89 spindles. In 1978, heterosis was expanded in our nation's Henan, Hebei, Jiangsu, Sichuan, Hubeu and Hunan provinces to 160,000 mu, producing 20 to 30 percent more in yield than the popular superior variety.

At present, the main hybrid variety of cotton is an artificial hybrid variety. India has successfully bred a sterile line Gregg, and it has been used to produce the hybrids CPH2 and CPH4, which are being subjected to comparison tests. The original variety farm in Yilong County in our nation's Sichuan Province selected a sterile line dong A ban from dong ting No 1. The two-line method was used for production. In 1978, it was demonstrated in southern Sichuan in more than 1,400 mu.

Utilization of heterosis by means of chemically induced male sterility in cotton can also be done. Combination of the three lines as a set is being studied but there has not been any breakthroughs yet.

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CSO: 4007

BRIEFS

PRC NATIVE PRODUCE--The 1980 National Commodity Fair for native produce and fruits, sponsored by the All-China Federation of Supply and Marketing Cooperatives, was held in Zhengzhou, Henan, from 21 to 29 September. More than 5,000 representatives of supply and marketing cooperatives, light industry, forestry and animal byproduct departments from all provinces, municipalities and autonomous regions took part in the fair. In a few days time, 1.049 billion yuan of sales were concluded. The sales volumes of native produce, fresh and dried fruits and dried vegetable condiment increased by 21 percent, 128 percent and 91 percent respectively, compared with the last commodity fair of the same kind. [OW051210 Beijing Domestic Service in Mandarin 0400 GMT 3 Oct 80]

NATIONAL AFFORESTATION CONFERENCE--Nanjing, 8 Oct (XINHUA)--It was disclosed at the Fourth National Conference on Afforestation in the plains that afforested acreage in the past 3 years was close to the total afforested acreage in the 27 years before that period. Statistics show that since 1977, 100 million mu of farmland has been surrounded by forests, 15 million mu of cultivated land has been interplanted with crops and tong trees and 3.2 billion trees have been planted. Taking into account the figures before 1977, China has surrounded 192 million mu of farmland with forests, interplanted crops with tong trees on 29 million mu of cultivated land and planted 7.2 billion trees. The afforestation of the plains has begun to produce results in some advanced counties. Farmland is being protected, agriculture and animal husbandry promoted, timber supply improved and peasants' income increased. [OW090455 Beijing XINHUA Domestic Service in Chinese 0231 GMT 8 Oct 80]

GRAIN PURCHASE, SALES--According to a CAIMAO ZHANXIAN BAO report, more than 14 billion jin of grain were purchased and sold at negotiated prices throughout China in the past 18 months, with 10.5 billion jin from April 1979 to March 1980 and more than 3.6 billion jin from April to August this year. [Beijing Domestic Service in Mandarin 2230 GMT 6 Oct 80]

METEOROLOGICAL SCIENCE POPULARIZATION MEETING--Hangzhou, 7 Oct (XINHUA)--At a national meeting on creative works for popularization of meteorological science, held in late September in Hangzhou, Zhejiang, awards were presented

to 58 advanced individuals and 17 advanced units. Among the individuals receiving awards was Jin Chuanda, a geography teacher in Xiuning County, Anhui Province, who had written 4 books and close to 200 articles on basic knowledge of meteorology. Another award winner was Wu Tianfu, a cadre of the Hunan Provincial Meteorological Bureau. Since 1973 this cadre had written 5 books, consisting of 400,000 words, popularizing meteorological knowledge, which had been well received by the masses. The meeting also awarded prizes to a number of outstanding books, articles and fine art works concerning meteorological science. [Beijing XINHUA Domestic Service in Chinese 0203 GMT 7 Oct 80]

AGRICULTURAL MACHINERY SOCIETY COUNCIL--Beijing, 14 Oct (XINHUA)--The well-known mechanics expert Guo Dongcai was elected president of the Chinese Agricultural Machinery Society here today. Guo Dongcai, 71, graduated from the Tokyo Institute of Technology of Japan in 1935. He was once president of the Chinese Academy of Agricultural Mechanization and is now vice-chairman of the Scientific and Technological Committee of the Ministry of Agricultural Machinery. A 130-member council was elected at the second congress of the society now being held in Beijing to discuss how to achieve agricultural mechanization in China. More than 190 specialists from scientific research institutions, colleges and factories are taking part. It was learned that the society is to hold its annual forum from 15 to 17 October. Invited to the meeting are specialists and scholars from Australia, Austria, Canada, Denmark, France, the Federal Republic of Germany, Italy, Japan, the Netherlands and Yugoslavia as well as the International Society of Agricultural Engineering, the United Nations Industrial Development Organization and the International Rice Research Institute. [Text] [Beijing XINHUA in English 1527 GMT 14 Oct 80 OW]

PLAINS AFFORESTATION--Nanjing, 9 Oct (XINHUA)--China has afforested nearly as much plains territory over the past 3 years as she did in the previous 27 years. This was announced at the Fourth National Conference on the Afforestation of Plains Areas, held in Nanjing, called by the Ministry of Forestry. Since 1977, the conference was told, 6.7 million hectares of farmland in plains areas have been put under the protection of newly built windbreaks. A total of 3,200 million trees have been planted, including those along roads and rivers and around villages and houses. To date, China has planted 7,200 million trees in the plains. About 12.8 million hectares of farmland are now protected by windbreaks. Research data show that wind speed in areas protected by tree belts is reduced by 30-50 percent, humidity is raised by 10-30 percent, and evaporation is cut by 14-40 percent, compared with the open areas. This helps increase the yield of wheat by 13-26 percent and that of rice by 21-25 percent. [OW150015 Beijing XINHUA in English 1212 GMT 9 Oct 80 OW]

FORESTRY ECONOMICS SOCIETY--Beijing, 21 Sep (XINHUA)--The China Forestry Economics Society has been set up in Beijing to study the role of forestry in the national economy and forestry modernization and management. Yong Wentao, vice-minister of forestry, was elected president of the society and Yu Guangyuan, vice-president of the Chinese Academy of Social Sciences, was engaged as an adviser. [Text] [OW220225 Beijing XINHUA in English 0805 GMT 21 Sep 80 OW]

ANTHER CULTURE GRAPE CULTIVATION--Jinan, 1 Oct (XINHUA)--Agronomists in east China have obtained grape vines by culturing anthers of grapes in test tubes. The anther is the part of a plant containing pollen. This is the first known successful experiment in breeding a deciduous fruit by anther culture in China. It reduces breeding time considerably. Agronomists Zou Changjie and Li Peifen and their group in Shandong Province began the research in 1974. They used more than 100 varieties of grapes and carried out 800 experiments. Now more than 200 of these grape vines have grown to over 1 meter high in the greenhouse of the research station. Earlier, China succeeded in using the technique to breed rubber, popular and citrus saplings. [Text] [Beijing XINHUA in English 0245 GMT 1 Oct 80 OW]

SUCCESS IN INCUBATING LOBSTERS--Beijing, Oct 4 (XINHUA)--The Zhanjiang City Aquatics Research Institute in south China's Guangdong Province has succeeded in incubating lobsters, according to a PEOPLE'S DAILY article today. At the end of the first stage of experiments which began in July this year, the article notes, thousands of young lobsters are growing well and their length now averages 1.5 millimetres. Lobsters usually weigh from half a kilogram to three kilograms. Owing to the low survival rate of young lobsters resources decreased. Therefore, artificial incubation is vital for expanding production, the article says. [Text] [OW040928 Beijing XINHUA in English 0753 GMT 4 Oct 80]

CSO: 4020

PARTY COMMITTEE STEPS UP FORESTRY DEVELOPMENT

OW140228 Hefei Anhui Provincial Service in Mandarin 1100 GMT 13 Oct 80

[Excerpts] The Anhui Provincial CCP Committee recently made a decision on developing the province's forestry at a faster pace.

The decision says: Anhui Province has made marked achievements in forestry production since the founding of our country. Especially under the guidance of the 3d plenary session of the 11th Central Committee of the Chinese Communist Party, the Anhui Provincial Party Committee has strengthened its leadership over forestry, followed a correct principle on production in mountain areas and adopted a series of policies and regulations governing production development in mountain areas, the construction of mountain areas, the strengthening of forestry management in mountain areas and the improvement of people's living standards in mountain areas. All this has given a direct impetus to the development of Anhui's forestry production. However, many problems still exist. These problems mainly find expression in a small percentage of land area covered with trees, failure to maintain the balance of the natural ecological system, sharp contradictions between the demand and supply of timber and bamboo, slow progress in afforesting barren hills and wasteland and insufficient control of illegal logging.

The decision says: To change this state of affairs in forestry effectively and to speed up Anhui's forestry development, the provincial party committee has called on all localities to conduct thorough investigations and studies and to work out better afforestation plans in accordance with the principle of adapting to the actual conditions of every mountain area. Trees must be planted along roads, rivers and ditches and around houses in Anhui's plain and hilly areas by 1985, and all barren hills must be covered with trees by 1990. When completed, Anhui's land area covered with trees will be increased from 14 percent at present to 25 percent. Beginning in 1981, concrete measures must be taken to afforest 2 million mu of land, plant 200 million trees around houses and along rivers, road and ditches, mark off 3 million mu of hilly areas for afforestation and [words indistinct] 500,000 mu of forest annually.

The decision says: The policy of all-round development with forestry as the main target must be resolutely implemented by all forestry zones in Anhui Province in order to arouse the people's enthusiasm for afforestation. To this end, the provincial party committee has designated Qimen, Xiuning, Shexian, Yixian, Jixi, Jingde, Taiping, Shitai, Dongzhi, Yuexi, Ningkuo, Jingxian, Jinzhai and Huoshan as major forestry counties. All communes, production brigades and production teams in mountain areas must give priority to forestry production. In all collective afforestation, a system of fixed responsibility should be established to guarantee that trees are planted, survive and grow into forests.

After urging the party committees at all levels to exercise stronger leadership over forestry development, the decision points out in conclusion that each and every rural cadre, party and CYL member and Young Pioneer in Anhui must strive to become activists for promoting forestry production.

CSO: 4007

BRIEFS

ESTIMATED CROP OUTPUT--According to initial estimates revealed by Zhang Jingfu, governor of Anhui at a press interview on 3 October, Anhui's total grain output for this year may still reach 31 billion jin despite earlier adverse weather conditions and flooding. The total area flooded this year was about 17 million mu. Although this grain figure is somewhat lower than that of last year, oilseed crops yielded a "big bumper harvest" this year. Cotton, hemp, tea, tobacco and silk production also was higher this year compared with the previous year. Moreover, diversified undertakings have been restored and developed in rural areas. As a result, the total rural income for this year will exceed that of 1979. [Hong Kong TA KUNG PAO in Chinese 5 Oct 80 p 1]

FEIXI COUNTY HARVESTS--This year Feixi County in Anhui has reaped a total of 136.89 million jin wheat from its 397,110 wheat fields, 14.7 percent higher than last year. It has also increased the total yield from its 195,781 mu rape fields by 130 percent. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 3 Oct 80 OW]

CSO: 4007

BRIEFS

FUJIAN RICE PRODUCTION--Fujian will reap a relatively bumper harvest in intermediate and late rice production this year. By the end of September, the province had harvested 14,000 mu of intermediate and late rice and the average production per mu was 490 jin, representing an increase of 20 jin per mu over 1979. The total production of 3.45 million mu of intermediate and late rice this year is expected to exceed that of 1979. [Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 21 Sep 80]

FUJIAN TIMBER PRODUCTION--By 20 September, the staff and workers of all forestry departments and rural communes and brigades throughout Fujian Province had produced some 2.4 million cubic meters of timber, 79 percent of the province's annual quota for timber production. The 114 state lumber mills in Fujian have fulfilled 87 percent of their annual quotas. By the end of August, 29 of 51 timber-producing counties and municipalities had fulfilled more than 75 percent of their annual quotas. [HK091358 Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 25 Sep 80]

SUMMER GRAIN PROCUREMENT--Fujian Province has overfulfilled the summer grain procurement quota at 2 billion jin. The early rice harvest in Fujian this year is a bumper one despite unfavorable weather. All counties throughout the province fulfilled their procurement task in early September. [HK101458 Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 29 Sep 80]

EEL EXPORTS--Fuzhou, 4 Oct (XINHUA)--The Hanjiang eel-breeding farm in Putian County, Fujian Province, has begun to export live eels to Japan. This fish farm, built under a contract with Japan, has 27 fish ponds at present with a total area of 26 mu. According to the design, the farm can produce 80 dun of eels annually. Since last February, 363 kilograms of eel fry have been put into the ponds, and thanks to good management, the fish have been growing well. [Beijing XINHUA Domestic Service in Chinese 0118 GMT 4 Oct 80 OW]

CSO: 4007

BRIEFS

GANSU GRAIN, OIL-BEARING SEEDS--Mine County, Gansu Province, registered marked increases in grain and oil-bearing seeds in 1980. Total grain output value was 150 million jin, and oil-bearing seeds output value was 7 million jin, up 15 percent respectively over 1979, a new record. Output of commune's 110,000 mu of private plots and animal feeds cultivation plots increased 11 times over that of 1979. From this alone, each commune member received an extra 100 jin of food grain. [Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 3 Oct 80]

CSO: 4007

DEVELOPMENT OF SUGARCANE INDUSTRY DISCUSSED

Favorable Conditions

Guangzhou NANFANG RIBAO in Chinese 11 Jul 80 p 2

[Article by Wang Jianming [3769 7003 2494], Chief, Institute of Cane Sugar Research, Ministry of Light Industries: "On the Three Great Advantages of Guangdong for the Development of Cane Sugar Production"]

[Text] The conditions for developing cane sugar production are very good in Guangdong. The natural geography is suitable for the growth of sugarcane. The equipment for producing cane sugar is there, with high production capacity and great potential. The technological capacity is there, with numerous technicians skilled in cultivating sugarcane and manufacturing cane sugar. Cane sugar has a large market in China. It is suggested that the development of cane sugar production be given encouragement at the policy level. Production arrangements should be suitably adjusted to strengthen scientific research on sugarcane and to extend scientific culture of sugarcane.

At present, everyone is talking about how to enhance advantages and avoid shortfalls in connection with the problem of developing the superiorities of Guangdong Province. This is a good question. If we can clarify the advantages of Guangdong for selective development, we can quickly work out the province's economy. Based upon theoretical research and experiments over many years, I believe the province has three great advantages in developing cane sugar production.

The first is its natural geographical advantage. The province is located in the tropical and subtropical zones. The climate is warm, with an abundance of rainfall and a long frostfree period; therefore, it is very suitable for the growth of sugarcane. The yield is especially high in the Pearl River Delta, and the sugar content of the cane is high as well. Judging from Shunde County, the average yield of sugarcane may reach above 5 tons per mu, and the sugar content may reach 13 to 15 percent. The yield in sugar per mu may be more than double that of other provinces. All crops in Gunagdong dread typhoons, Rice dreads typhoons, and sugarcane dreads typhoons, but compared with sugarcane, rice dreads typhoons more. This is due to the

fact that the typhoon season is the harvest time for early rice, and a typhoon can often cause a great reduction in the rice yield--even a loss of the entire harvest. For sugarcane, however, this is a time of growth. Although typhoons may also cause losses in sugarcane, it is easy to apply emergency measures. The rain following the typhoon is very favorable for the growth of sugarcane. The Pearl River Delta has another very favorable condition for sugarcane culture, and that is the convenience of transportation. This is an area of crisscross streams. The stream network is very densely distributed. Transporting sugarcane by waterways is the least expensive in the entire country. The transportation cost for each ton of sugarcane is only 1-4 yuan.

The second advantage lies in the sugar refining equipment. The province now has 131 sugar refineries. There are 17 refineries with daily capacities of over 1,000 tons and 59 medium-size refineries with daily capacities of 350 to 1000 tons. This provides a total daily capacity of over 83,000 tons amounting to more than 40 percent of the sugar refining capacity of the country. At present, the equipment is only 70 percent utilized; there remains a very great potential for further development. Furthermore, the refining period at these plants is usually only 80 to 90 days [per year] and never exceeds about 100 days. If the refining period is properly lengthened, with some additional investment to renew and build the equipment, the production capacity of a number of plants may easily be doubled. By the way, after the sugar refining season, the tools of the plants are unused. If corn is imported, these tools may be used to process syrup, and thus the production capacities of these sugar refineries may be fully used to increase social wealth. Each jin of corn may be made into 1 jin 3 liang of high-grade syrup. This project will not only produce considerable income, but it may also provide raw materials for the food and pharmaceutical industries. It is an enterprise with a promising future.

The third advantage is that of technical capabilities. The province has a long history of sugarcane culture and sugar manufacture. As early as the Han Dynasty, someone by the name of Yang Fu [2799 1318] wrote a book, "Yiwu Zhi ["Book of Strange Things"], in which he said: "Ganzhe [sugarcane]... is for obtaining its juice raw.... Cook it and sun it, and when it congeals, it is like ice... Some call it rock honey." This Yang Fu was a native of Guangdong. It is obvious that Guangdong has a history of over 2,000 years of cultivating and processing sugarcane. With regard to sugar refineries, the first mechanical sugar refinery in China was built in Guangdong. Prior to the War of Resistance Against Japan, there were eight large sugar refineries in the Pearl River Delta, including those at Shunde, Dongyuan, Xinzao, etc. A group of sugar manufacturing specialists existed then. After liberation, the party and the people exerted great efforts to support scientific research into the development of sugarcane culture and sugar refining, and a group of research organizations and refineries were established. A large number of skilled technicians were trained. At present, the province has a team of several thousand persons skilled in the planting of sugarcane, in the making of sugar, and in the comprehensive utilization, research, and teaching of production technology. This team

not only satisfies the needs of domestic production, but some of its members also take on the job of helping foreign countries. Besides, the capabilities for designing, manufacturing, and installing sugar refining machinery are also rather good in this province.

In a word, Guangdong's advantages in developing its cane sugar industry are quite obvious. It should be especially mentioned here that cane sugar has an extensive market in China and the supply of domestic sugar remains a great deal less than the need. There is no worry about producing more sugar than can be sold. Currently, some countries that produce cane sugar have adopted a policy of limiting the production of cane sugar and purchasing at a reduced price any portion that exceeds this limit. This problem does not exist in China.

How can Guangdong's cane sugar production be raised to a new level? I have some ideas and suggestions.

First, the development of cane sugar must be given some encouragement in policy. Fujian Province practiced a policy of a ton of sugar for a ton of grain to encourage commune members to produce sugar in excess of quota, and the policy has produced 2 consecutive years of large increases in sugar production. In order to produce more sugar, it is necessary to plant more sugarcane. So that the commune members will be willing to plant more sugarcane and cultivate it well, it is necessary to make the farmers feel that there is a profit to be gained in planting sugarcane, and the completion of the grain quota must be guaranteed. For this reason, when a pricing policy and encouragement policy are being formulated, ways to activate a positive attitude on the part of members for planting sugarcane must be taken into consideration. A policy of awarding prizes must be implemented to allow the members to gain real benefits. Policies must not be changed frequently. Some areas may be chosen as test points to practice the method of profit-sharing between the sugar refinery and the sugarcane farmers.

Second, there should be a suitable adjustment in production arrangements. The province now has about 3 million mu in sugarcane which produces only about 1 million tons of cane sugar a year. The sugarcane acreage in Australia is about the same, but the annual production of cane sugar is about 3 million tons. It is obvious that the sugar yield per mu in Guangdong is very low. Why is it so low? One of the important reasons is an unreasonable arrangement of production. The sugar yield per mu of Shunde County in Guangdong is almost the same as that of Australia, but that of some other places is much too low. If we were to use land suitable for sugarcane to plant sugarcane, and land not suitable for sugarcane for other crops, thereby creating a suitable concentration of sugarcane culture for specialized production, conditions would be more favorable for modernization of cropping and producing techniques, and even if the acreage were not increased, the yield could be greatly raised. Of course, a suitable concentration of sugarcane cultivation does not mean planting sugarcane forever. Rotating sugarcane with other crops, such as rice, is better for the growth of sugarcane. I maintain that

the sugarcane acreage should not be immediately enlarged. I believe that efforts should be given to adjust the canefield arrangement to raise the unit yield.

Third, scientific research on sugarcane must be strengthened to expand the scientific cultivation of sugarcane. I believe the technique of pot culture of seedlings should be expanded in a big way, so as to adopt the method of cultivating seedlings in late spring for summer transplanting and cultivating seedlings in late autumn for winter transplanting, thereby replacing the current method of planting sugarcane in the spring and autumn gradually. These two methods of seedling culture require no plastic thin film and are easily extended. The first method can improve the production of the perenial roots of sugarcane and in 2 years raise the harvest of early rice or peanuts or the unit yield of winter potatoes to create the conditions for short-term crop rotation or reduce losses to typhoons. The second method can shorten the period of use of the land for the fall sugarcane crop and produce the same result as fall-planted sugarcane. Through experimentation and demonstration, the new Manshanduo No 8,000 chemical ripening agent has been extended to cause Yue-sugarcane 71/210 and summer-planted sugar cane to ripen earlier. Furadantin has been used to control cane borers, cotton aphis, and other cane pests. Superior breeds of sugar cane have been extended wherever the land is suitable and chemical weeding agents and phosphorus fertilizer applied. We also want to absorb the advanced experience of [countries of] the world in sugarcane culture and to utilize the favorable conditions that are the special gift of nature in Guangdong to contribute to China's development of cane sugar production.

Advantages To Be Gained

Guangzhou NANFANG RIBAO in Chinese 11 Jul 80 p 2

[Article by Zhuang Yao [8369 3613]: "There Are Many Advantages in Developing Production of Cane Sugar]

[Text] The natural conditions of Guangdong for planting sugarcane are excellent, and the foundation of the sugar manufacturing industry is relatively good. As a matter of fact, cane sugar production should have been accelerated, but the acreage and yield of sugarcane have been reduced in recent years. Is this due to the fact that we have not recognized the advantages of cane sugar production? I believe it is very necessary to improve our knowledge of the advantages in developing cane sugar industry.

Planting sugarcane requires little investment and produces large profits. Comparing sugarcane with grain, the average yield of rice in Guangdong last year was worth 112 yuan per mu and the cost was 68 yuan. The net difference was 52 yuan from 1 mu of sugar cane over that of rice. It must also be noted that the unit yield of rice in Guangdong last year was the highest in history, while the unit yield of sugarcane did not reach the highest level in histroy. At present, the land used for sugarcane is generally not as good as the land used for rice. If sugarcane is emphasized the same as rice, and the same amount of land and manpower is applied, the yield of sugarcane will be still higher. For these reasons, the income from sugarcane may be much more than that of rice.

When more sugarcane is available, the development of light industry can be stepped up to increase financial income and employment. When more sugarcane is planted, the sugarrefining industry can develop further. With the development of the sugar industry, sugarcane chemistry, papermaking, the manufacturing of artificial feed, and the food industry can also be promoted. Last year, the value of the products of the sugar industry amounted to 8 percent of the value of all the products of light industry. The percentage is much greater if other light industries promoted by the sugar industry are included. Last year, the cane sugar industry provided taxes and profits for the state amounting to 12 percent of the total financial income of the province. In the 30 years since liberation, the income provided to the state by the sugar industry has been more than 10 times the capital investment provided to the sugar industry by the state. The sugar industry requires a certain amount of manpower, but the province has plenty of manpower searching for employment. At present, the province has more than 100 sugar pressing factories, with more than 45,000 permanent employees and 15,000 seasonal employees. There are also some farmers who work for local sugar factories operated by communes and brigades. If the sugar industry can be developed further, it can absorb even more manpower.

An expanded sugar industry can save foreign exchange for the state. At present, China's sugar production is less than self-sufficient and depends partially upon imports. The price of sugar on the international market is more than two and one-half times of that of rice and more than four times that of wheat. If the foreign exchange used to import sugar is spent to import grain, a great deal of foreign exchange may be saved. It is often said that Guangdong has a large population and very little arable land, making the problem of food difficulty to resolve. If a solution is sought through the development of merchandise production and not through great efforts to achieve grain self-sufficiency, the sugarcane acreage can be enlarged and that of grain reduced. Sugarcane can be planted in exchange of grain, and the sugar produced from 1 mu of land can be exchanged for the grain produced from more than 1 mu. In this manner, the problem of lack of arable land may be resolved.

The development of cane sugar is an important problem in the province's acceleration of economic construction. Currently, the Party Central Committee has clearly directed the province to adjust its economic structure, to exploit advantages and avoid shortcomings, and to develop cane sugar production. We must be resolved to implement this policy. If we are determined to apply strong measures and correct policies for the rapid development of cane sugar production in the province, the entire economy of the nation will certainly develop and prosper soon.

6168
CSO: 4007

HAINAN NOTICE ON PROTECTING RUBBER PLANTATIONS

HK130516 Haikou Hainan Island Service in Mandarin 0330 GMT 12 Oct 80

[Excerpts] The Hainan regional commissioners' office promulgated and started to execute on 11 October a notice on [word indistinct] rubber plantations and having the agricultural reclamation departments procure in a unified way the rubber grown on people's communes. The notice stressed: It is necessary to implement the state council's decision on speeding up the building of Hainan Island, correctly handle relations between state farms and communes, deal blows at a handful of criminal elements sabotaging rubber production and persons engaged in speculation, uphold the interests of the state and collective, and speed up the development of rubber production.

The notice said: The people's government and agricultural reclamation departments at all levels must organize the cadres and masses to seriously study and publicize the state council's decision on speeding up the building of Hainan Island, enhance and unify their understanding, seriously implement the production principle of concentrating on developing rubber and other tropical crops, and speed up the development of rubber and other tropical crop production in Hainan, to make contributions to the state's economic construction.

The notice said: Protecting the rubber plantations is the common responsibility of the people of all nationalities in Hainan. We must deal resolute blows at and punish according to law a very small number of criminal elements who take the lead in sabotaging state and collective property and gravely violate law and discipline. We must commend and reward units and individuals who have scored outstanding success in developing rubber production and protecting the plantations.

The notice stipulated: Beginning 11 October 1980, the latex, rubber strips, crepe and so on produced by all county and municipal communes and brigades and local state farms will be procured in a unified way by the agricultural reclamation departments at prices regulated by the state.

The notice demanded that resolute blows be dealt at criminal elements and speculators engaged in peddling rubber products. It is necessary to trace the responsibility in cases of units and individuals establishing private rubber procurement centers, scrambling to buy rubber and transporting it in a surreptitious way. All rubber bought illegally or transported surreptitiously must be confiscated by the local industrial and commercial administrative departments. Thirty percent of the income from such confiscations is to be handed over to units and individuals who gained merit in exposing such cases.

The notice said in conclusion: It is necessary to seriously handle land disputes between state farms and communes. Such disputes must be settled properly after full consultations in accordance with the State Council's eight principles for handling land disputes between state farms and communes. If such consultations are inconclusive, the status quo should be maintained and the problem should be referred to higher authority for handling. It is impermissible to make such disputes a pretext for causing disturbances or sabotaging production; if that happens, those responsible will be prosecuted.

CSO: 4007

SHUNDE COUNTY STRESSES SPECIAL LOCAL ADVANTAGES, GIVES STATISTICS

Guangzhou NANFANG RIBAO in Chinese 30 Aug 80 p 2

[Article by correspondent Wang Qicong [3769 0796 5115] and reporter Li Erkuan [7812 1422 1401]: "Shunde County Stresses Special Local Advantages to Achieve Prosperity More Rapidly, Overall Development of Agricultural Sideline Products, Particularly of Economic Crops, Total Value of Industrial and Agricultural Output Throughout the County Last Year Averaged 1000 Yuan Per Person, Production Team Grade 1 [0001 4787] Distributions Averaged 22 Yuan Per Person"]

[Text] Shunde County, where the economic crop producing areas of Guangdong Province are concentrated, recently put into effect a program of "complete development of agricultural and industrial sideline products with the emphasis primarily on economic crops" in an effort to increase commodity production, so that the collective economies of rural villages will be rapidly strengthened and striking increases will take place in the level of distributions to commune members to make the county become the currently most relatively prosperous one in Guangdong Province.

Last year, total industrial and agricultural output value for all of Shunde County amounted to more than 796 million yuan for an average of 1000 yuan per person. The value of agricultural sideline products transferred to the state by the entire county was the equivalent of almost 1 billion jin of grain, for an average of 236 yuan for every person engaged in agriculture. Total value of goods purchased by the state for foreign trade amounted to more than 150 million yuan, with goods exported directly from Shunde ports alone creating 58 million dollars worth of foreign exchange, for an average of 100 dollars for every person engaged in agriculture. Production team grade 1 [0001 4787] distributions averaged 220 yuan per person, an increase of 46 yuan over 2 years ago. This year, this county's industrial and agricultural sideline industries have seen new development. For the first half year, total output value of silkworm cocoons throughout the county was 13.2 percent more than for the same period last year, and even though pond fish were seriously damaged by cold, output value was still greater than for the same period last year. Sugarcane production was generally better than last year, and total output value of commune and brigade operated business enterprises showed a 24.5 percent increase over the same period last year.

Shunde County is located in the central part of the Pearl River Delta. The area is crisscrossed by rivers and dotted with ponds, and the soil is rich. It is thus naturally endowed with the conditions for the development of economic crops. The cultivated area of the county is 650,000 mu, which is 0.67 percent of the cultivated area of the entire province, but total output value of agriculture amounts to 3.1 percent that of the entire province. Fresh water fish amounts to 20 percent of the province's total amount marketed; sugarcane production accounts for 11 percent of the province's total, and silkworm cocoon production is more than 50 percent that of the entire province. For these reasons, it has been called the "land of fish and rice," and "silk capital of the south." During the rampage of Lin Biao and the "gang of four," however, development of economic crops came under criticism as a capitalistic tendency of "three stresses and three slights." As a result, some places saw the destruction of fish ponds, mulberry bases, and sugarcane fields were converted to rice fields in the destruction of what had formerly been a quite rational pattern of production with a weakening of the collective economy. By 1976, production team grade 1 average per capita distribution throughout the county were only 135 yuan. Once the "gang of four" had been overthrown, and particularly following the Third Plenary Session of the 11th Party Central Committee, the Shunde County CCP Committee carried out a criticism of the extreme leftist line, continually liberated thoughts, and implemented the various policies of the party, and only then did a gradual revival and development of economic crops take place.

In order to make the most of the special advantages of the areas in which economic crops are concentrated, all the communes and brigades made a preliminary readjustment of the pattern of production under the guidance of the state plan to produce fish in places suited to fish production, mulberry trees in places suited to mulberry trees, sugarcane in places suited to sugarcane, and paddy rice in places suited to paddy rice. In the economic crop production areas, they rolled back the croplands to replace them with ponds (or mulberry trees or sugarcane), and after restoring the former composition of production, they vigorously promoted rotational cropping for sugarcane, sericulture, and peanuts. Now the area of crop rotation in these places totals 250 million mu, which is 11 percent of the total area of sugarcane and silkworm cocoon production. This has played a very large role in increasing the fertility of the land and increasing output. At the Shajiao Commune, which is a major sugarcane producing area, sugarcane has been grown on drylands for a long period of time year after year with the result that fertility of the soil has declined and output has become increasingly less. In recent years, they instituted rotation of mulberry with sugarcane, and sugarcane with other economic crops on part of their land. Per mu yields of sugarcane increased as a result from somewhat more than 4 tons to somewhat more than 6 tons. Throughout the commune this year, sugarcane has grown better than last year, and output value of silkworm cocoons for the period January through June increased by 17.5 percent over the same period last year. Forty of the 66 production brigades in the paddy field regions have readjusted their pattern of production while guaranteeing increases in grain production. They have converted a total of 15,000 mu of paddy fields to the cultivation of economic crops. This amounts to 9.6 percent of the total paddy fields in the paddy field area.

In the development of its agriculture, Shunde County has put to use the advantageous conditions of being close to large and medium cities as well as to neighboring Hong Kong and Macao for the vigorous development of commune and production brigade enterprises and the development of foreign trade. Last year, total output value for commune and production brigade enterprises throughout the county amounted to more than 220 million yuan. During the past several years, the Longjiang, Shajiao, Leliu, and Chencun communes have annually used several hundred thousand yuan of the income from business enterprises for investment in agriculture, providing large amounts to capital for the development of economic crops. Last year, capital derived from the income of commune and production brigade enterprises and used to support agricultural production amounted to 4.35 million yuan.

Recently the Shunde County CCP Committee summarized the lessons of the past several years of experience. They felt strongly that though the county had made some effort toward the development of economic crops and commune and production brigade business enterprises, as a result of the limitations of the current system of management, Shunde had not made the fullest use of the special advantages offered by the areas in which economic crop production is concentrated. They felt that there is still a large potential for implementation of policies and a large potential for production. The current output of silkworm cocoons throughout the county is still insufficient to serve the needs of the silk reeling industry. Five silk filature plants must import cocoons from other counties every year. Per mu yields of pond fish are still not high. With an ample supply of feed, they could be greatly increased. In addition, problems in the return of profits to the farms and division of foreign exchange from foreign trade remain to be solved. All these matters impair the enthusiasm of the masses. These problems require that further actions be taken by higher authority and departments concerned for their solution.

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CSO: 4007

BRIEFS

SILK PRODUCTION POTENTIAL--Historically, silkworm cocoons have been the foremost economic crop produced in Guangdong Province. During the mid-1920's, Guangdong Province produced more than 1 million dan of silkworm cocoons, and exported more than 60,000 dan of natural silk amounting to about half the value of all natural silk exported nationwide at the time. Though much work has been done since Liberation in the development of sericulture with an annual production of 400,000 dan of cocoons as of 1979, which was four times the amount of the immediate post-Liberation era, nevertheless it still does not meet the highest levels ever recorded and development has been very unbalanced, being concentrated in several counties of the Pearl River Delta. Many places where sericulture has been practiced historically produce few cocoons today. During the past several years, annual exports of natural silk from the entire province has amounted to about 300,000 dan. In 1979 foreign exchange earnings from the export of silk amounted to almost 70 million dollars, which was only about 10 percent of the total value of silk exports nationwide. In the development of sericulture production, I believe it is still necessary to make the most of advantages and play down disadvantages, by which I mean we must do more to develop fine quality cocoons, and produce higher quality silk in order to earn more foreign exchange and increase the income of the farmers. In recent year, erhuaxing [0059 0553 1844] cocoons have accounted for only about one-fifth total cocoon output, and more than 30,000 dollars per ton has been earned from silk reeled from these kinds of cocoons while the silk reeled from the other four-fifths of the duohuaxing [1122 0553 1844] cocoons fetches a price that is lower by from 15 to 20 percent, and which is harder to sell as well. Furthermore, for the same dan of mulberry leaves used by farmers to raise silkworms, the sale of erhuaxing cocoons from the second crop for from the sixth and seventh crop of cocoons is a little greater. Annual average output value for a dan of mulberry leaves is also somewhat greater from erhuaxing cocoons. Inasmuch as conditions are currently in readiness with quite good erhauxing superior varieties and scientific techniques for growing mulberry and raising silkworms, all that is needed is liberal wages and benefits in award sales and the enthusiasm of the farmers for the raising of erhuaxing cocoons will be raised. [Text] [Guangzhou NANFANG RIBAO in Chinese 29 Aug 80 p 2] 9432

SUMMER GRAIN PROCUREMENT--According to the statistics of the Guangdong Provincial Grain Department, by 15 September, the province had overfulfilled its quota for summer grain procurement by 100.3 percent. Foshan and Zhaoqing prefectures, Guangzhou, Zhangjiang Prefecture, Hainan region and Zhuhai Municipality overfulfilled their quotas for summer grain procurement. In view of uneven production of summer grain this year, the provincial people's government readjusted the procurement quotas of all prefectures in a timely manner. After the readjustment, the province reduced the quotas for summer grain procurement by some 90 million jin, compared with last year. The province reduced the quotas for summer grain procurement of Hainan region and Foshan and Zhaoqing prefectures by some 133 million jin because the latter suffered from natural disasters. [Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 22 Sep 80 HK]

ZHAOQING PREFECTURE FRESHWATER FISH--Zhaoqing Prefecture in Guangdong Province has increased its fish-raising areas to more than 174,000 mu. The amount of freshwater fish produced in the first half of 1980 increased 35.6 percent over that in the corresponding period in 1979. [Hong Kong ZHONGGUO XINWEN in Chinese 16 Aug 80 p 4]

CSO: 4007

BRIEFS

SUMMER GRAIN INCREASE--According to data just compiled by the investigation committee for summer grain output, the output of summer-harvested grain in Guangxi increased 220 million jin, a 2 percent increase over the same period in 1970. Of this, early rice increased by 173 million jin, a 1.83 percent increase and early and mid-season corn increased 88 million jin an increase of 5.4 percent over 1979. This year Guangxi designated 150 communes as commercial grain bases. The increased output from these bases has been relatively large. For example, Nanning Prefecture designated 35 communes as commercial grain bases. The area planted to grain in these bases account for about 40 percent of the grain area in the prefecture. The increase in early grain output accounted for 78 percent of the total increase in the prefecture. [Hong Kong ZHONGGUO XINWEN in Chinese 16 Aug 80 p 1]

CSO: 4007

BRIEFS

EARLY RICE PRODUCTION--Early rice harvest was completed by 4 September in Guizhou Province, and production of early rice was increased. The average yield per mu has been increased by 40 jin. The total harvested area in Guizhou Province was 51,500 mu and the average per unit area yield was 558 jin. The province started late rice sowing after the early rice harvest, and by 4 September, the province has sown an area of 35,700 mu. [Guiyang GUIZHOU RIBAO in Chinese 12 Sep 80 p 1 HK]

AUTUMN FARMING--This year Guizhou Province has 15.5 million mu of fields sown with autumn crops, which accounts for 54 percent of its arable land. The province has 4.3 million mu of fields with rape, 4.55 million mu of fields sown with wheat, 2.55 million mu sown with potatoes, 1.9 million mu sown with miscellaneous grains and 2.2 million mu sown with green manure. After readjustment this year, the areas sown with rape this year are 1.1 million mu more than last year while the areas sown with wheat this year are 1.55 million mu less than last year. [Guiyang Guizhou Provincial Service in Mandarin 2315 GMT 21 Sep 80 HK]

CSO: 4007

TELEPHONE CONFERENCE ON PLANTING TREES HELD

SK141110 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 13 Oct 80

[Text] According to station reporters, the Heilongjiang Provincial People's Government held a telephone conference last night, calling for efforts to plant trees this autumn. The conference urged all localities to fully mobilize the masses to earnestly implement the policy of "whoever afforests the land owns the trees" and to immediately bring about an upsurge in planting trees, especially trees used for firewood and charcoal.

The conference noted: Our province has some 3.65 million peasant households, of which 2 million are short of firewood. Therefore, the planting of firewood and charcoal forests is a major matter in solving the energy problem in rural areas. It has a direct bearing on the livelihood of the peasants and the development of agriculture and animal husbandry.

The conference urged all localities to allocate about 3 mu of land to each commune household to plant trees for firewood and charcoal and, in line with the principle of making use of whatever land is suitable for agriculture, forestry and animal husbandry, to make full use of all forest land to plant firewood and charcoal forests. Localities with plenty of forest lands can allocate more lands for commune households. Each commune household can afforest its share of land for personal use. The land should be owned by the collectives, the forests should be owned by the individuals and the products should be owned by the peasants themselves. Such a policy will not change for a long time. In the first 2 years, commune households can plant brushwood, and the profits they gain should accrue to them. A general survey should be conducted by the commune forest stations to which the commune households belong after afforestation. Forestry licenses will be issued by the municipal or the county people's governments for those commune households whose tree survival rate is some 80 percent. Those who fail to achieve this figure must reafforest the land until they reach the target. Forestry licenses will then be reissued to them.

The conference urged all localities to make proper arrangements, consider the planting of firewood and charcoal forests as one of the important contents of the farmland capital construction, concentrate all efforts and time on grasping this work and ensure that the firewood problem in our province's rural areas is solved in 2 to 5 years.

CSO: 4007

BRIEFS

LAND RECLAMATION--According to recently compiled statistics, the 155 mechanized reclamation centers in Heilongjiang Province have transformed 265 million mu of wasteland into farmland. [SK112308 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 9 Oct 80]

AGRICULTURAL ZONES READJUSTED--Harbin, 4 Oct (XINHUA)--Mishan County in Heilongjiang has readjusted its agricultural zones by reducing the size of its cropland from 2.07 million mu in the past to 2 million mu at present and by expanding its woodland from 2.04 million mu in the past to the projected 2.97 million mu. When this goal has been achieved, 44 percent--instead of the current 16.5 percent--of the county will be covered by trees. In the light of its natural conditions, the county has also demarcated the slopeland in the central and northern parts of the county for production of soybean and sundry crops and has encouraged the commune members to develop animal husbandry in the hilly areas in the north. [Beijing XINHUA Domestic Service in Chinese 0231 GMT 4 Oct 80 OW]

HEILONGJIANG FARM OUTPUT--Tieling Prefecture, Heilongjiang Province, has managed to reap a relatively good harvest despite natural disasters. The prefecture's total grain output is estimated at 4,376 million jin, an increase of 99 million jin over 1979 figures. [SK021107 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 29 Sep 80]

REFRIGERATING PLANT--Harbin, 10 Oct (XINHUA)--A new meat packing and refrigerating plant with a storing capacity of 10,800 tons went into operation in the northeast China city of Harbin yesterday. It is one of the many projects being built in China to meet the growing demands for meat packing and cold storage capacity. Since the government raised meat purchasing prices last year, Chinese peasants are raising and selling more pigs. The highly mechanized Harbin refrigerating plant can process 2,000 pigs every day. All its equipment is made in China. [Text] [Beijing XINHUA in English 1021 GMT 10 Oct 80 OW]

CSO: 4020

BRIEFS

FERTILIZER USAGE IN 1979--In 1979 about 50 jin of nitrogen fertilizer and approximately 8 jin of phosphate fertilizer were applied, on the average, to each mu of farmland throughout Henan Province. [Chengzhou HENAN NONGLIN KEJI (HENAN AGRICULTURAL AND FORESTRY SCIENCE AND TECHNOLOGY) in Chinese No 9, 10 Sep 80 p 5]

APPLE HARVEST IN 1979--In 1979, the 2 million mu of apple trees in Henan Province produced a bumper harvest. Total output was 600 million jin. In recent years there has been an average annual increase of 100 million jin. This year it is predicted that the apple harvest will amount to 700 million jin. In five years it could increase to 1.2 billion jin. [Chenzhou HENAN NONGLIN KEJI (HENAN AGRICULTURAL AND FORESTRY SCIENCE AND TECHNOLOGY) in Chinese No 9, 10 Sep 80 p 28]

SEED BREEDING-SUPPLY NETWORK--Zhengzhou, October 13 (XINHUA)--A well-established seed breeding and distribution network has helped increase harvests in central China's Henan Province, one of the country's major producers of wheat, cotton, sesame and peanuts. At present, there are thousands of seed breeding centers run by state farms, people's communes and their sub-divisions. Each county in the province has set up a seed company to deal with seed processing and supplying. Over 150 million kilograms of fine seed of various crops have been distributed to growers in the past two years. The germination rate of wheat seed processed with seed selectors by some of the companies has reached 98 percent. This widespread seed breeding and distribution system has enabled the province to popularize the seeds best adapted to the local soil and climate. This year the acreage sown to such seed accounted for 94 percent of the total land under wheat and that for maize 89 percent. Last year the peasants began experimenting on sowing seed strains according to the type of soil and climate in one locality. They applied this zoning method this year to cotton and the crop is doing well. They plan to do the same for their winter wheat cultivation. [Text] [OW131212 Beijing XINHUA in English 1200 GMT 13 Oct 80]

COTTON OUTPUT--Henan Province has reaped a good harvest from its 9 million mu of cotton after surmounting difficulties caused by drought, insect pests and other natural disasters. The 1980 total cotton output is estimated to reach 5.05 million dan, an increase of 27 percent compared with 1979. By the end of September, the province had already procured more than 530,000 dan of the newly reaped cotton. [Beijing Domestic Service in Mandarin 1200 GMT 8 Oct 80 OW]

CSO: 4007

BRIEFS

HUBEI AQUATIC PRODUCTION--Hubei Province has done well in developing aquatic production in the wake of readjusting the national economy. In 1979, the total fish production was 241 million jin. From January to July 1980, the total fish production amounted to 202.87 million jin, representing an increase of 16 percent over the corresponding period in 1979, and the number of fish fry amounted to 13 billion, an increase of 18 percent over the same period in 1979 and an all-time record. All leaders and aquatic product departments throughout the province have been working hard to increase aquatic production. At present, 5 municipalities under the jurisdiction of the province, 4 prefectures and 35 counties have set up or reestablished aquatic bureaus. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 18 Sep 80]

CSO: 4007

BRIEFS

GRAIN MOLD CONTROL--Changsha, 12 Oct (XINHUA)--The Hunan Provincial Scientific and Technical Commission and food department have commended use of an aromatic oil that controls aflatoxin, a carcinogenic substance produced in grain by mold. The research project was started by the Provincial Cereals and Oils Scientific Research Institute and the Zhijiang County Food Bureau in 1978. They selected litsea cubeba fruit from more than 180 kinds of medicinal herbs. The No. 1 grain depot of Changsha treated 1,250 tons of rice with steam,generated by boiling 12.5 kilograms of the aromatic oil distilled from litsea cubeba fruit. Three months later, the aflatoxin content had dropped from 100 micrograms to less than 10 per kilogram of rice. This is within the standard set by the state. Trial use by some small and medium-sized grain depots showed that all aflatoxin content could be eliminated. The oil is also effective in controlling the growth of other molds and preventing some insect pests in grain depots, without toxic effect. [Beijing XINHUA in English 0213 GMT 12 Oct 80 OW]

HUNAN AGRICULTURAL ZONING MEETING--A Hunan Provincial meeting on agricultural natural resources and agricultural zoning closed in Changsha on 20 September. The meeting summed up past experience in agricultural zoning and made arrangements for work over the next 2 to 3 years. The meeting urged all places to speed up agricultural zoning and grasp training work. At present, the province is short of technicians and capable persons. All provincial departments concerned should organize teams to help localities promote agricultural zoning work. [Changsha Hunan Provincial Service in Mandarin 1100 GMT 21 Sep 80]

CSO: 4007

OFFICIALS SUBMIT DRAFT REPORT ON AGRICULTURAL ZONING

OW141248 Beijing XINHUA in English 1219 GMT 14 Oct 80

[Text] Nanjing, October 14 (XINHUA)--A draft report of the natural resources and agricultural zoning in Jiangsu Province, east China, has just been submitted by scientists and agricultural officials.

Scientific data were accumulated to improve soil, build water conservancy projects and work out rational crop systems.

Output of economic crops can be expanded steadily, according to the draft report, on the basis of raising per-hectare grain yield. Particular emphasis will be placed on cotton, silkworm cocoon and rapeseed production. New centers will be established in northern Jiangsu to grow cotton and produce silkworm cocoons.

Mountainous and hilly areas should be afforested, more criss-crossing tree-belts built to protect farmland on the plains and more trees planted around villages and along roads and rivers.

Pig raising will be given priority in animal husbandry, while the raising of other grass-consuming domestic animals will be encouraged. Sea and fresh water fishing, and fish breeding and catching will be developed, with emphasis placed on fish breeding.

Moreover, further efforts will be made to develop the production of aquatic products in rivers and lakes, to grow crops the year round and to replenish the fertility of the land.

Though Jiangsu has made marked achievements in water conservancy, the draft report points out, present irrigation projects are still insufficient to ensure high, stable agricultural output in adverse weather.

Efforts should be intensified to cope with low temperatures, frost, excessive rainfall, typhoons and other natural adversities.

Surveys began in the mid 1960s, and the province's food grain and cotton output rose 5.1 and 4.2 per cent respectively each year in the 1970s, with fairly big increases in the production of edible oil, silk cocoon, pigs and poultry.

The area of low-yielding soil has since decreased and land fertility raised. But the physical and chemical properties of the high-yielding soil in some regions have deteriorated and there are problems in the three-crop areas.

A more detailed survey is being made. The soil survey will be extended to 30 more counties by the end of this year.

CSO: 4020

BRIEFS

TEA HARVEST--The three tea farms of Nanjing Municipality, Jiangsu Province, have reaped bumper harvests. Total production amounts to 610 dan, up by 25 percent compared with last year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 6 Oct 80 OW]

RAPE SOWING--Yangzhou Prefecture of Jiangsu Province has a plan of growing 830,000 mu of rape this year. By 25 September, 190,000 mu of seedlings fields had been sown. When transplanted, these seedlings will be sufficient for 850,000 mu of rape crop fields. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 4 Oct 80 OW]

GUANNAN COUNTY COMBATTING DROUGHT--Communes and brigades in Guannan County, Jiangsu, are actively engaged in combating drought and making preparation for fall sowing. So far, they have irrigated some 60 percent of drought-stricken cropland and sown 80,000 mu of wheat. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 3 Oct 80 OW]

RICE HARVEST--Over 20 million mu of intermediate and hybrid rice is being harvested in Jiangsu Province. As of 9 October, nearly 10 million mu was harvested, accounting for 52 percent of the total rice acreage. Seventy-four percent of Yancheng Prefecture's 2.96 million mu of intermediate and hybrid rice was harvested as of 7 October. [OW141115 Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 13 Oct 80 OW]

CSO: 4007

BRIEFS

JIANGXI CASH CROP PRODUCTION--Jiangxi's cash crop harvest was still a bumper one this year despite unfavorable weather. Production of cotton, sugarcane, tea and other cash crops are expected to exceed production in 1979 by 100 to 300 percent. The reason for this is that leaders have seriously implemented the party's economic policy and encouraged development of cash crops. Jiangxi Province has also allocated funds for some areas to develop cotton, tea and sugarcane production. Therefore, the area for cotton growing has been expanded by some 100,000 mu this year and area for sugarcane growing has also been expanded. Also all localities have done well in learning science and technology and in improving the level of scientific cultivation. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 28 Sep 80]

JIANGXI SUMMER GRAIN PROCUREMENT--Some places in the province such as Yiyang, Guixi, Hengfeng, Shangrao, Yingtan and Jian municipality have fulfilled and overfulfilled summer grain procurement tasks this year. Despite bad weather since the summer grain harvest, all workers in these counties and municipalities made the most of fine days to fulfill their procurement quotas. Thus, their income was increased. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 13 Sep 80]

JIANGXI FISH BREEDING--Jiangxi Province is one of the country's commodity fish bases. Jiangxi Province has built 23,620 mu of fish bases with 7,477 mu of feed plots, and trained 2,070 professional workers. Thus, production has been increased. In 1979, 6,300 dan of fish was breed in 16 fish bases and the average rate was 100 jin per mu. It is possible to fulfill the quota of breeding 27,691 dan and turning over 19,600 dan to the higher authorities this year, since conditions are sound. The development of commodity fish bases is an important measure for enriching people living in coastal and lake regions. [HK061158 Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 15 Sep 80]

JIANGXI TUNG OIL PRODUCTION--From January to August this year, all native product departments throughout Jiangxi Province procured some 1.12 million jin of tung oil, 21.5 percent more than in the corresponding period last year. The province's output of tung oil last year was only 6 million jin, less than half of the quantity demanded. The quantity procured was less

than one-fifth of the quantity demanded. Beginning in the autumn of 1978, departments concerned have selected 28 counties as the province's tung oil production bases and each year appropriated 600,000 yuan in funds to help these bases develop tung oil production. This year tung trees were planted on some 300,000 mu. The area of tung trees has expanded from 900,000 mu in 1978 to the present 1.75 million mu. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 27 Sep 80]

JIANGXI ANIMAL, AQUATIC PRODUCTION--Development of animal husbandry and aquatic production in Jiangxi Province has been rapid this year. From January to August, the total aquatic production amounted to 760,000 dan, showing an increase of 300 percent over the same period last year. Since 1979, the province has worked hard to implement the principle of developing agriculture, forestry, animal husbandry, sideline production and fishery, and bring the superior situation of the province into play. Animal husbandry and aquatic production have been greatly developed since the Jiangxi Provincial People's Government's meeting on animal husbandry and aquatic production in the beginning of 1980. Since then, all localities have enhanced the people's sense of responsibility in rearing rabbits and breeding fish, and encouraged people to develop animal husbandry and fish breeding as domestic sideline production. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 28 Sep 80]

CSO: 4007

ACHIEVEMENTS OF NINE MARKETABLE GRAIN BASES REPORTED

SK120628 Changchun Jilin Provincial Service in Mandarin 1100 GMT 11 Oct 80

[Text] The first group of counties to be built into marketable grain bases--Yushu, Dehui, Nongan, Jiutai, Shuangyang, Huaide, Lishu, Yitong and Fuyu counties--have achieved notable results in the past few years.

Farm mechanization is the key to building marketable grain bases. These counties have firmly grasped this key factor and have exerted great efforts to develop it. They have rapidly increased their farm machines, and they now have some 9,700 large and medium-sized tractors, a 59-percent increase over 1976. Land leveled, sown or cultivated by machines has doubled, crops have been able to be planted at opportune times and their quality has improved. As a result, grain and soybean production has been greatly developed.

From 1977 to 1979, the total output of grain and soybeans in these nine counties was 24.97 billion jin, 49 percent of the province's total output. In 1979 their total grain and soybean output was 9.31 billion jin, increasing 1.8 billion jin over the 1976 figure. Marketable grain handed over to the state by these nine counties from 1977 to 1979 was 9.53 billion jin, 58 percent of the total amount of marketable grain the province handed over to the state. Comparing 1979 with 1976, marketable grain handed over to the state increased by 30 percent--or 840 million jin.

The nine marketable grain base counties have implemented the principle of planting according to local conditions and have adjusted crop patterns. They have expanded fields sown to oil-bearing crops, beets and potatoes and have achieved very good economic results. The total output of oil-bearing seeds in these counties in 1979 was 142 million jin, 42 percent higher than in 1976. Their total output of beets in 1979 was 693 million jin, 6 percent higher than in 1976.

Animal husbandry has also been developed in these counties. In 1979 they had 2.68 million pigs and 404,000 sheep, 6 percent and 66 percent increases respectively over 1976 figures.

The counties have also developed forestry, sideline production and fisheries. The collective economy has been expanded, commune members' income has increased and their living standards have improved. Average per capita food grain in these counties was 595 jin in 1979, 86 jin more than the average per capita amount of the province. Per capita income in 1979 was 129 yuan, 13 yuan more than the average per capita income of the province.

This year these nine marketable grain base counties have overcome serious natural adversities and will have a good harvest.

CSO: 4007

BRIEFS

LIAONING COTTON PRODUCTION--Yingkou County, Liaoning Province, had gathered 300,000 jin of cotton and handed over to the state 60,000 jin of ginned cotton as of 22 September. The county planted cotton on 22,500 mu of land this year. The per mu output of ginned cotton is expected to reach 100 jin. [Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 29 Sep 80]

LIAONING FARM, SIDELINE PRODUCE--The Liaoning provincial supply and marketing cooperative held a telephone conference 28 September urging all departments concerned to concentrate all manpower and trucks on procuring and transporting farm and sideline produce this season. As of 25 September, Liaoning Province had procured 22,000 dan of cotton, an increase of 5 times over 1979, 21,000 dan of flue-cured tobacco, up 12 percent over 1979, and 41,000 tons of apples. The total value of procured autumn farm produce reached 9.19 million yuan, an increase of 15 percent over that of 1979. [SK021135 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 30 Sep 80]

XINBIN MINOR HARVEST--Shenyang, 5 Oct (XINHUA)--Xinbin County, Liaoning, has encouraged local commune members to go to the mountains to collect wild fruits, vegetables, herb medicine and other plants. At present, they have collected a total of 2.1 million jin of such plants worth more than 800,000 yuan. All the income belongs to the commune members themselves. [Beijing XINHUA Domestic Service in Chinese 0151 GMT 5 Oct 80 OW]

CSO: 4007

CONFERENCE HELD ON GRAIN WORK, DISASTER PREVENTION

SK140701 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 12 Oct 80

[Excerpts] According to our sources, a regional conference on promoting production so as to solve difficulties with one's own efforts and on grain work was recently held in Nei Monggol. The conference stressed that during this winter-spring period, party committees and governments at all levels must do a good job in promoting production through one's own efforts and in combating natural adversities to protect animals. They must combine these two tasks so as to convert a disaster-ridden year into a fruitful one and to provide favorable condition for developing agriculture and animal husbandry next year and in the years to come.

The conference analyzed the regional situation in developing agriculture and animal husbandry, summed up experience and lessons in combating natural adversities and drew up plans for promoting production, combating disasters to protect animals and procuring and transporting grain during this winter-spring period.

Leading comrades of the regional party and government organs including Zhou Hui, Kong Fei, Peng Mengyu and Shi Guanghua addressed the conference.

This year drought is comparatively serious in the region. Owing to natural adversities, gross grain output in the entire region will decrease 20 percent over that of 1979. Despite better achievements in livestock breeding, animals are not well fed because of a shortage of fodder grass and animal feeds. This resulted in great difficulties in production and people's livelihood in the agricultural and pastoral areas. However, there is one salient feature of this year's agricultural disasters. There are both bumper harvests and poor harvests. Even the heavy disaster-ridden leagues, banners and counties registered production increases in some banners, counties, communes and brigades.

The conference noted that despite natural disasters in agriculture and animal husbandry, our region, as compared to 1979, has increased its total output of oil-bearing crops and sugarbeets, developed forestry

production and increased the total income of some commune and brigade-run enterprises. Production of some state agricultural and livestock farms has universally increased over that of last year.

The conference mapped out plans for work during this winter-spring period. It urged all localities to first do a good job in ideological and political work, set the minds of the people in the disaster-stricken areas at ease and adopt effective measures for doing relief work well. It noted it is necessary to open up more production avenues and increase the income of collectives and commune members. All regional departments should spare no efforts to support drought-combating work. Agricultural areas should do a good job in threshing and storing grain so as to lessen the losses. Pastoral areas should grasp well drought-combating work and protection of animals. Since this winter-spring period is a crucial one for next year's livestock production, it is therefore necessary to try everything possible in preparing the animals to tide over the winter and spring.

The conference urged party committees and governments at all levels to show concern for the difficulties of the people in the disaster-ridden areas and to arrange well for their livelihood. It is necessary to grasp well the procurement and sales of grain and oil-bearing crops and properly supply grain-deficient banners in line with policy.

Attending this conference were 200 responsible persons of 45 disaster-ridden banners from various leagues and municipalities, responsible persons of the grain departments of various leagues, municipalities, and key banners and counties and responsible comrades of regional committees, offices, departments and bureaus concerned.

CSO: 4007

BRIEFS

STATE PLAN FOR WOOL--Hohhot, Oct 4 (XINHUA)--Inner Mongolia, one of China's major stock-breeding areas, fulfilled its 1980 state purchase quota for sheep, camel and goat wool four months ahead of schedule. By the end of August, 39,000 tons of wool had been purchased. This was three per cent more than the planned target. Peasants and herdsmen in the autonomous region were eager to sell high-quality wool to the state, following an increase in animal products purchase prices by the government. [Text] [OW040806 Beijing XINHUA in English 0732 GMT 4 Oct 80]

CSO: 4020

CONFERENCE ON AGRICULTURAL RESOURCES SURVEY, ZONING HELD

SK121324 Xining Qinghai Provincial Service in Mandarin 2330 GMT
11 Oct 80

[Excerpts] According to our sources, the Qinghai Provincial People's Government held its second provincial work conference on agricultural and animal husbandry resources survey and zoning of crop and livestock areas from 4 to 8 October in Huangzhong County, summing up the past year's work and setting forth the next 2 years' tasks.

Over the past year, considerable achievements have been scored by Huzhu and Haiyan counties, the two pilots units to conduct agricultural and animal husbandry resources survey and zoning of crop and livestock areas. Soil surveys have been completed in 16 communes and are going on in the remaining ones of Huzhu County. The surveys on water, climate, animals, poultry and biological resources are in full swing. Haiyan County has completed all fieldwork and has now taken on the work of research and analysis. The results are expected to come out before the end of this year.

In addition to experimental work, Qinghai Province has organized professional personnel to work on the comprehensive zoning of crop and livestock areas in Qinghai Province and a 110,000-word rough draft report has been completed. The provincial grassland general station has conducted investigations on grassland resources in four counties in [words indistinct] area. The agricultural department has finished the initial zoning of agricultural areas. A training class, first of its kind in the province, has been held to train cadres in charge of agricultural zoning work. More than 140 cadres have been trained.

Some localities, however, lack understanding of this work and lag behind owing to failure in centralizing technical forces, shortage of funds and insufficient transport facilities.

CSO: 4007

BRIEFS

QINGHAI AGRICULTURAL ZONING COMMISSION--The Qinghai Provincial Commission for agricultural and animal husbandry zoning was established recently. The commission held its first plenary session 26 September. Ga-bu-long, standing committee member of the Provincial CCP Committee and deputy provincial governor, was elected chairman. [SK061202 Xining Qinghai Provincial Service in Mandarin 2330 GMT 3 Oct 80]

WATER CONSERVATION--Qinghai Province has done a good job in water conservation work this year. The problem of potable water has been solved for 40,000 people and 170,000 head of livestock, irrigated areas have increased 28,000 mu and 78 wells have been installed. [Zining Qinghai Provincial Service in Mandarin 2330 GMT 9 Oct 80 SK]

CSO: 4007

BRIEFS

AUTUMN SOWING--As of 8 October, Shandong Province had sown 48.4 million mu of wheat, fulfilling 87 percent of the wheat sowing plan. [SK141811 Jinan Shandong Provincial Service in Mandarin 2300 GMT 11 Oct 80 SK]

SHANDONG COTTON PROCUREMENT--Dezhou Prefecture, Shandong Province, had procured 620,000 dan of ginned cotton by 7 October, prefulfilling the state plan by 4.9 percent. Top-grade ginned cotton accounts for over 85 percent of the total. [SK081104 Jinan Shandong Provincial Service in Mandarin 2300 GMT 7 Oct 80]

CSO: 4007

BRIEFS

XINJIANG CATTLE RAISING--Urumqi, 4 Oct (XINHUA)--Xinjiang Uygur Autonomous Region has achieved fairly good success in developing cattle raising. By the end of last June the region had raised 2.57 million head of cattle and bred 360,000 head of calves. This year Ili Prefecture has raised 578,000 head of cattle, or one-fourth of the total number of cattle in Xinjiang, and has become the principal supplier of beef, milk, milk powder and cowhides in Xinjiang. While promoting cattle raising in pastoral areas, Xinjiang has also encouraged cattle raising in agricultural areas. This year the agricultural areas in Kashi Prefecture have raised 400,000 heads of cattle, or 20 percent of the number of cattle in Xinjiang, while Aksu Prefecture has raised 290,000 head of cattle. Because of the development of cattle raising, supply of beef and milk, which used to be in short supply in Xinjiang for many years, has been improved. [Beijing XINHUA Domestic Service in Chinese 0245 GMT 4 Oct 80]

PISHAN COUNTY WHEAT SOWING--To do a good job in sowing 140,000 mu to winter wheat this year, the Pishan County party committee has adopted a personal responsibility system, linking the individual's rewards with the result of his work. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 5 Oct 80 OW]

MOYU COUNTY GRAIN OUTPUT--Summer grain output in Moyu County, Xinjiang, this year has increased by 3 million jin over that in the last year. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 5 Oct 80 OW]

CROP PRODUCTION--The output of summer grain is five percent and oil-bearing crops ten percent more than last year in the Ili River Valley area in the northwestern part of the Xinjiang Uygur Autonomous Region. This follows two successive years of good harvests. The output of wheat in some state farms averaged 4.5 tons per hectare and oil-bearing crops more than 1.8 tons per hectare. [Beijing XINHUA in English 0710 GMT 14 Oct 80]

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LHUNZHUB COUNTY RAPESEED HARVEST--Lhunzhub County, Xizang, has produced a total of over 1 million jin rapeseeds this year, an increase of 400,000 jin over last year. In 1979 the county harvested 618,000 jin rapeseeds from its 9,800 mu fields. [Lhasa Xizang Regional Service in Mandarin 1100 GMT 3 Oct 80 OW]

NAGU PREFECTURE LIVESTOCK BREEDING--Lhasa, 30 Sep (XINHUA)--Nagu Prefecture, a major livestock breeding base of Xizang, registered an increase in the number of livestock this year. The total number reached 9.06 million head, 1.36 million head more than last year. [Beijing XINHUA Domestic Service in Chinese 0119 GMT 30 Sep 80 OW]

ENTHUSIASM OVER NEW POLICIES--The implementation of new policies in the Tibet Autonomous Region has aroused the herdsmen's enthusiasm. The major livestock producing area of Nagqu reported 9,060,000 domestic animals this year, 1,360,000 more than the previous year. [Text] [Beijing XINHUA in English 0710 GMT 14 Oct 80 OW]

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LOW TEMPERATURE DAMAGE--Seven days of low temperatures beginning on 19 September have already severely affected Zhejiang's late rice output. If steps are not taken quickly, the late rice runs the risk of having large areas of "raised panicles" [panicles which have numerous empty grains]. A responsible comrade of the provincial agricultural department commented that this fall has seen low temperatures and much rain. Hangzhou Municipality and Jiaxing Prefecture have experienced an average daily temperature of below 20° C during the past week. Such low temperatures for such a long period have not occurred since Liberation. Such low temperatures are not beneficial to the more than 3 million mu of late transplanted rice. According to records, the low temperatures were more severe this year than in the autumn of 1970 and 1971 when raised panicles occurred in approximately 1.5 million mu of late rice. According to the meteorology department, beginning on 26 September, the weather throughout the province will improve and during the next 3-5 days there will be more sunny days which should allow temperatures to rise. This opportunity should be taken to apply appropriate measures which will increase the weight of the kernals and prevent disease, especially rice neck blast. [Hangzhou ZHEJIANG RIBAO in Chinese 26 Sep 80 p 1]

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I. GENERAL INFORMATION

ACCELERATION OF STATE FARM ECONOMIC DEVELOPMENT URGED

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 80 pp 2-3

[Article: "Struggle To Achieve an Overall Improvement in the State Farm Economy"]

[Text] The broad masses of laborers on the farming front, their hearts filled with exultation, enter the decade of the 1980's. A look at the year just past shows that under the encouragement of the spirit of the Third Plenary Session of the 11th Party Central Committee and the Second Session of the Fifth National People's Congress, the state farms have shifted work emphasis to economic construction, output has continued to climb, and outstanding improvements have been made in management. A comparison of 1979 with 1978 shows a 10 percent increase in the estimated total grain output, a 6 percent increase in cotton, a 2 percent increase in dry rubber, and an 8 percent increase in industrial output value. Profit units for farming enterprises nationwide have increased 10 percent over last year. These accomplishments have been made during the process of the launching of in-depth discussions of experience being the sole criterion for testing truth, a profound criticism of the extreme leftist line of Lin Biao and the "gang of four," the liberation of thought, the implementation of various policies of the party, and the readjustment of the management of enterprises. It is also the result of the arduous struggle and hard work of the broad masses of cadres and the masses in implementing, "Central Committee Decisions on Several Problems Pertaining to Acceleration of Agricultural Development." For this we express our heartfelt congratulations and convey our cordial solicitude to comrades in every trade and every industry struggling in the farming system.

While reviewing our accomplishments, it is also necessary to take a clear-sighted look at the problems and new conflicts that will be encountered in the forward march of our work. In the case of levels of output, for example, the situation of low and inconsistent yields per unit of area on farms has still not changed. Per unit yields of grain for quite a few provincial farms are lower than the average for the province. In the area of management, development of farms is very unbalanced. Profits for some farm units amount to only 55 percent of the total figure for the farm; 45 percent of the units show losses, and units showing losses still depend on the state for

supplementary subsidization. State increases in prices paid for agricultural products is the principal factor in the increased income of state farms. The decision by the state to adjust wages for some workers, to institute increased prices and subsidies for sideline products, and to provide labor insurance to farm workers has doubtlessly given impetus to the arousal of worker enthusiasm, but this has also increased the costs of agricultural enterprises. This raises an important mission for struggle, namely the need to unite as one, to be of one heart and one mind, to rely on the broad masses, to work hard for the prosperity of the country, to overcome difficulties, and to struggle to achieve an overall improvement in the state farm economy.

The year 1980 marks the second year of implementation of the policy of readjustment, restructuring, consolidation, and improvement, the core of which is the need to do a good job of readjustment. Only by doing a good job of readjustment can the entire economy move along the track of planned, proportional, high-speed development. Within the next 2 or 3 years, our farming battle line must undergo readjustment, development of production, and the opening of all avenues of financial resources to achieve a situation in which an absolute majority of farms and industrial enterprises rather than just farms and industrial enterprises as a whole can show profits and provide the state with more agricultural and livestock products and industrial goods than is presently the case. Once profits have increased, we can use our own profits to expand further production in a "snowball" effect to achieve even better economic results and to make a greater contribution to the state. Experience has demonstrated that the old way of "eating from the common pot" that endured for so long whereby "earnings large or small were handed over to higher authority and losses large or small brought a request for handouts from higher authority" can continue no longer. Every echelon of leadership in the farming system must clearly see, first of all, the urgency of this problem. Every farm and industrial enterprise that is now still sustaining losses faces the great and difficult problem of its continued existence. Any thought of continued reliance on the state for subsidies to get by instead of actively using the brain to think of ways to do things and find a way out of problems, or an attitude of continuing in the same old rut while hoping for a rapid change in one's own situation is dangerous.

Both the history of the development of farming and current experience tell us that as a result of the destruction of the ultra-leftist line of Lin Biao and the "gang of four," as well as our own unclear understanding of the economic laws of socialism, many shortcomings exist in the guiding ideology, system, and methods of economic work that have not allowed full play of the superiority of the state farm system of ownership by all the country. Now many leading comrades on farms and in farm management units have liberated their thoughts, destroyed some forbidden zones, and have led the broad masses of workers to reform some of the rules and regulations that have fettered development of productivity; they have overcome the evil of eating from the common pot and egalitarianism, to varying degrees, and have made great improvements in the contenances of enterprises. Experiences of this kind should be well summarized. Experience as the sole criterion for testing truth and the seeking of truth from facts is our ideological line. We have to be pragmatic and, through investigation and study, take those methods that have been found in practice to be beneficial in arousing the enthusiasm of the workers and of enterprises

to promote the development of production, concentrate them, and adhere to them. We must proceed from a foundation of discussions about the criteria for truth combined with the realities of state farms to further define the goals of socialist production so that economic activities will have a clear guiding idea, so that farming enterprises will produce better to satisfy the regular increases in material and cultural needs of the entire society, will reduce blind action, and will make fewer detours. We must clearly recognize that some present rules and regulations impede enthusiasm in enterprises and among workers, and fetter the development of productivity. These are still weak links in the management of enterprises. During 1980, we must continue to liberate thoughts and summarize experiences and go on to resolutely overcome "eating from the same pot" and egalitarianism, to reform irrational rules and regulations, properly handle the relationship among the state, enterprises, and individuals, to fully arouse the enthusiasm of enterprises and of workers, and make good progress in improving the level of management in enterprises.

The natural resources of state farms are extremely abundant; there is a large labor force; and there is a vast untapped potential for production. At the present time, some farms are operated in a unitary way and still do not make full use of local resources, or else they violate natural laws in consequence of poor direction given by their leadership, thereby destroying natural resources. This lesson must be borne in mind. We must do things strictly in accordance with natural laws, set economic programs through the adaptation of methods to local situations, and dare to institute readjustments in irrational production patterns. We must use local natural resources in the most rational way possible, broaden the avenues of production, use every manner of means to increase goods for the country, and increase the income of farms. We must establish a new ecological system through our own work that combines agriculture, forestry, and livestock raising to achieve enduring consistently high yields. The forestry industry and the livestock raising industry are two weak links in the building of agricultural production. We must resolve to adopt measures that will enrich and strengthen them. During the period of readjustment, we must concentrate our strength to do a good job of cultivating existing land, take good care of existing rubber, and restructure existing industrial enterprises. We must use limited capital and material resources to change the conditions for production and to improve technical equipment in order to create a higher labor productivity rate. We must intensify scientific research activities, summarize advanced experiences, expand the application of advanced techniques, and promote the development of production. As regards the conditions of agricultural production, water conservancy projects must be given attention, and serious attention must also be given to biological measures in order to obtain the greatest economic benefits from the least possible investment of capital.

In the management of state farms, quite a few conflicts continue to exist in relations with external sectors and with irrational policies. During the 10 years of national upheaval when economic problems were faced and when numerous problems arose that should have been promptly solved, they were not solved for the time being whether because they were not fully understood or because of certain material or managerial difficulties. This should be

clearly explained to the broad masses of workers. That these problems have not been solved should not be allowed to impair fulfillment of various tasks, and much less should passive waiting be allowed. We must be on the watch for ways to tap unused potential on farms, using it as a foothold for doing our own work well. Only in this way may difficulties be overcome and greater advances be made.

The Party Central Committee has decided that state farms should establish joint agricultural, industrial, and commercial enterprises with all possible speed, meaning that they should engage in agriculture, in industry, and in commerce. Right now test sites are in being everywhere as a means of gaining experiences for gradual expansion. Leadership comrades at all echelons in farm management departments and farms must become experts not only in the management of farms and industries, but must also study how to do business. This will require constant understanding of changes in supply and marketing and prices prevailing in the marketplace so that one's own products will better suit the needs of the people and will enjoy a high reputation in the marketplace. We must also understand the situation in international trade, export more goods, be competitive in international markets, and create more foreign exchange. The expansion of the scope of operations as a result of the operation of joint agricultural, industrial,and commercial enterprises will require that we give increased attention to the improvement of management and administration, constantly improve the degree of specialization, do a good job of economic accounting, strive to reduce costs, and increase profits.

Leadership comrades on every echelon of farm management departments and farms must give full play to democracy, follow the mass line, and wholeheartedly rely on the broad masses of workers to run the farms and the industrial enterprises. They must show concern for the livelihood of the masses and take effective measures for an active solution to problems existing in the lives of the masses, particularly problems of a place to live. In our appraisal of how well an enterprise is run, it is not enough simply to look at whether production quotas have been fulfilled or what the contribution to the state has been, but it is necessary as well to look at how well the livelihoods of the workers have been improved. If attention is given to the peoples' livelihoods, production will inevitably advance.

The more economic work done, the greater the fine tuning; the more action, the more lively. Special attention must be given the weak links. Attention has to be given every losing unit one by one, and every loss item must be given attention one by one and completely until results are obtained. Leadership comrades on every echelon of farm management units and farms must learn how to manage and really become experts on agricultural economic work to give full play to their own ability and wisdom on this new long march, and to contribute their own strength to the construction of the four modernizations.

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FISCAL REFORM IN FARM RECLAMATION ENTERPRISES DISCUSSED

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 80 pp 14-15

[Article by Shi Weigang [2457 4850 0474]: "A Major Reform in the Fiscal System of Farm Reclamation Enterprises"]

[Text] In 1979, following state approval, farm reclamation enterprises instituted a system of fiscal responsibility of "independent accounting, sole responsibility for profits and losses, retention of profits, and no subsidization of losses." This constituted a major reform in the fiscal management system of "separate tracks for receipts and disbursements" whereby profits were tendered to higher authority and requests for subsidization of losses was made of higher authority. The institution of this system will make possible better use of economic laws and will give play to economic methods, thereby increasing the economic authority that enterprises should have, and increasing their economic responsibility. It also holds extremely important significance for arousing the enthusiasm and initiative of enterprises, for unearthing untapped potential from within, for improving administration and management, and for accelerating the development of construction for production by farm reclamation enterprises.

The system of fiscal responsibility has numerous advantages over the former method, foremost of which is that in being solely responsible for profits and losses, enterprises have the autonomy they should have. If an enterprise is well operated, profits are retained by the enterprise for distribution as it sees fit; if it is operated badly and sustains losses, the enterprise itself is responsible for solving the problem and the state will not subsidize it. This closely links success in management with economic benefits.

As a result of the expansion in the autonomy of enterprises, regulations permit enterprises authority to use their own profits or cash surpluses resulting from fulfillment of contracts for the development of production, for improvements in production conditions, to upgrade technology, or to go into new kinds of production. The change in the former system whereby all construction expenditures for production had to be arranged by the state has obviated the drawbacks of "unified receipts and unified expenditures," and has been helpful as well in overcoming the mentality of "wait, depend on, and ask for."

Secondly, the profits or cash surpluses resulting from fulfillment of contracts that enterprises retain may be used to improve collective welfare services or used to issue rewards to employees to give better expression to the principle of from each according to his work. When the enterprise's profits are large, collective welfare services will be run better, and the individual income of employees can increase as production grows. Disparity in distribution is permitted among enterprises, and disparities in the incomes of individual employees are also permitted in a true implementation of the greater the work the greater the return and the less the work the less the return.

Thirdly, use of this method advances the implementation of democratic management and strengthens the supervision of the masses. Since how well an enterprise is managed is intimately linked to the personal welfare of the employees, employees are more intensely concerned with the results of the operation of the enterprise. In matters such as the implementation of national policies and laws, measures to increase production while practicing economy, construction for production, welfare benefits, and labor protection, the broad masses of workers can take the initiative to look into, and participate in management and supervision. These things will become conscious acts of the masses.

To summarize the above, I feel that the system of fiscal responsibility that is currently being promoted holds numerous advantages for improvements in the administration and management of farmland reclamation enterprises, and for increasing the growth of production. Naturally, some problems may be expected in the process of carrying out the system of fiscal responsibility as a result of the great proliferation of items produced by farmland reclamation enterprises, differences in prices of goods and the existence of very great differences in the profit levels from one enterprise to another. These differences result not only from administrative and management factors within the enterprises themselves but also, to a large extent, from objective reasons. Institution of a system of fiscal responsibility permits differences among enterprises and permits some enterprises that are well run to become prosperous ahead of the others, but in terms of agricultural production, the differences produced are by no means entirely the result of the way the enterprise is run and how well the employees work. In a year of bumper harvests when the weather is favorable, output is high and costs are low, so profits will be large even though the workers did not necessarily work any harder. In a year of calamities, output is low and costs are high, so profits are less or there may even be losses. In order to combat the calamities, it is frequently necessary to work harder. For differences of this kind, a balancing must be done. So the system stipulates the establishment of a reserve fund that subsidizes the years of want from the years of plenty. Depending on the type, enterprises currently provide for three different ways of doing this: retention of profits, tendering to higher authority by contract, and subsidies paid at fixed periods of time. Production teams have instituted the "fixed contract reward" system by which they may set aside or retain funds from excess earnings after they have fulfilled or overfulfilled fixed contract quotas. This system has aroused the enthusiasm and initiative

of production teams and assured fulfillment of the quotas of enterprises. Along with this is adherence to the principle of from each according to his work with provision for awards to individuals so that the relations among the state, the enterprises, and the individuals will be handled well. It is also necessary to do a good job of ideological and political work. We are currently emphasizing use of economic methods to manage the economy, but this has to be supplemented with ideological and political work. We must achieve a combination, so that these activities will develop better and be done more dynamically.

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FARMLAND, RECLAMATION, STATE FARM PIONEERING DISCUSSED

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 80 pp 6-8

[Article from State Farm Bureau Policy Study Office: "Loving Care and Gigantic Development"]

[Text] Great developments have taken place as the result of more than 30 years of arduous pioneering efforts on our country's state farms. Agriculture that is owned by all of the people has become a major force in the socialist economy and has come to play an ever larger role in the new long march toward bringing about the four modernizations. The accomplishments of farm reclamation endeavors reflect the painstaking efforts of Premier Zhou. The guidance to state farm endeavors given by the premier encouraged our gigantic efforts to move forward; and the revered figure of the premier will forever stand tall and bright in the hearts of 5 million farm reclamation warriors.

Need To Unite With People of All Nationalities To Do a Good Job of Frontier Construction

The ranks of our nation's farmland reclamation corps have built on and strengthened by People's Liberation Army units transferred to civilian work. In compliance with Chairman Mao's 1947 instructions to "build stable bases in the Northeast," China's first state farm was established in Heilongjiang Province. Acting on changing developments throughout the country, in the early 1950's Chairman Mao ordered that a part of the People's Liberation Army participate in construction for production. These units were transferred to civilian assignments in border regions to open up land for production, and to develop wastelands. They were at once a production corps and a work corps as well as a combat corps to become a major force for the construction of the frontier and to protect the frontier. They also made a splendid contribution to the establishment of China's land reclamation endeavors. Premier Zhou was extremely concerned about farmland reclamation endeavors, and at the time of the transfer of the military units to civilian tasks, he earnestly instructed everyone of the neeed to carry forward and develop the fine traditions of the People's Liberation Army, and the definite need to unite with people of all nationalities to do a good job of construction on the frontiers. By way of strengthening the leadership of land reclamation

endeavors, the State Council formally established the State Farm Bureau in 1956, and reclamation areas in Xinjiang, Heilongjiang, Guangdong, Guangxi, Yunnan, and Fujian became enterprises under the direct control of the State Farm Bureau. From this time forward, farmland reclamation endeavors developed very rapidly. By 1965, the area of cultivated land amounted to more than 47 million mu, a 2.1-fold increase over 1957. Total grain output amounted to 7.1 billion jin for a 5.5-fold increase. Total cotton output amounted to more than 1.4 million dan for a 4.4-fold increase. The area planted to natural rubber amounted to more than 2.3 million mu for a 1.2-fold increase. Livestock numbered more than 10 million head for a 5.2-fold increase. Everywhere throughout the land, particularly in frontier regions, state farms spread like stars in the sky to play a major role in the development of the economy and culture of frontier areas.

Following the 1958 march into the Great Northern Wilderness of 100,000 military officers and men who had transferred to civilian occupations, great development took place in the Heilongjiang Reclamation area. Following establishment in 1963 of the Northeast Reclamation Bureau, Premier Zhou himself heard reports from leadership comrades in the reclamation area. He encouraged everyone by saying "the tops of your heads toward the sky and your feet trodding the barren plain, you are making a contribution to the opening and construction of the Great Northern Wilderness." The premier asked that the troops who were assigned to open up the wasteland become great models for socialist and mechanized agriculture with consistently high yields. Acting on the instructions of Premier Zhou, the broad masses of workers in the reclamation area courageously practiced and diligently summarized experiences in production, improvement of management, and increased output. By 1966, the area of cultivated land in this reclamation area already amounted to more than 8 million mu. Total grain output amounted to 2.8 billion jin; commodity grain sent to higher authority totaled 1.6 billion jin; the commodity rate was 57 percent for a profit.

The original Xinjiang production and construction army was a composite unit consisting of industrial, agricultural, commercial, and teaching troops for the operation of large-scale integrated agricultural, forestry, livestock raising, sideline occupation and fishery enterprises with independently operated farms and livestock farms, processing industries for agricultural and livestock products, farm machinery repair and manufacturing industries and other industrial and mining industries, construction industries, communication and transportation industries, commercial industries, and cultural, educational, and scientific research components as well. As of 1966, the total industrial and agricultural output value of the entire army in the reclamation area totalled 1.22 billion yuan of which the output value from industry amounted to one-third that of the entire autonomous region; commodity grain sent to higher authorities amounted to 450 million jin; and profits amounted to 93 million yuan. In battles to protect the frontiers, they also played a major role. In 1965, on their return to China from a trip abroad, Premier Zhou Enlai and Vice-premier Chen Yi traveled through Xinjiang, where, mindless of fatigue and the hardships of a long journey, they stopped to inspect the Shihezi reclamation area. On seeing the fine fields of the reclamation area layed out like a chessboard, the crisscross network of irrigation

canals, the verdant forest belts, and the industrial plants standing in great numbers, Premier Zhou was overjoyed and made a very high evaluation of the work of the military unit. Premier Zhou and Vice-premier Chen Yi warmly praised the soldiers of the military unit for their spirit of self-reliance and arduous struggle, and urged them to unite with people of all races in a struggle to build a socialist Xinjiang. Upon meeting cadres of the military unit, the premier quoted the verse, "One's place of interment should be a hill covered with mulberry and catalpa trees, and in life, green mountains abound everywhere," by way of instructing everyone to put down roots in Xinjiang. On meeting intellectual youths, the premier urged them to strive to study the works of Chairman Mao and to study agricultural science and technology, offering students who had graduated jobs in constructing the frontier to become successors for communism. To the leadership comrades of the military unit, the premier said that the intellectual youths had gone to the trouble of making a very long trip and that the cadres should look after them just as old soldiers looked after new ones in concern for the growth of a new generation. Upon leaving the Shihezi reclamation area, Premier Zhou wielded the brush to write the glorious inscription, "Raise high the great red banner of Mao Zedong Thought; prepare for war in defense of the frontier; produce and construct; unify nationalities, struggle arduously, strive to reform, and advance bravely." Vice-premier Chen Yi also wrote the verse, "The Gobi menaces a new world and great waves frequently surge from across the Tianshan [a mountain range separating China from the USSR] to encourage the farmland reclamation soldiers. The guidance from Premier Zhou and Vice-premier Chen Yi did encourage the broad masses of workers in the military unit to march forward victoriously to build the frontier and to protect the frontier.

Most state farms are spread throughout the regions of brother nationalities in frontier areas. As the transferred soldiers do a good job of production and construction, they actively do good deeds for the brother nationalities and promote the unity of all nationalities. When Premier Zhou visited Xinjiang, he instructed the leadership comrades in the Xinjiang army for construction of production that they must resolutely implement the party's nationalities policies, respect the customs of brother nationalities, study the languages of brother nationalities, train cadres from among brother nationality peoples, give attention to the recruitment into the party of comrades from national minorities, and recruit minority nationality youths as workers in farms and industrial enterprises. Premier Zhou instructed the cadres of Han nationality that they must identify with the various national minorities, live in harmony with them guard against feelings of arrogance, and overcome thoughts of Han chauvinism. When he visited reclamation areas in Yunnan Province, Premier Zhou spoke to the cadres earnestly and sincerely, saying that everyone should be like a red seed that wanted to unite with the people wherever it went and to put down roots and flower among the people.

Need for Farm Construction To Be New Reclamation Areas That Combine Industry and Agriculture, the City and the Countryside

Most state farms have been reclaimed and built in the uninhabited Gobi Desert wastes, in marshlands, in saline and alkaline lands, or in hilly and mountainous

land. Just what these farms should look like and toward what direction they should face was a major problem to which Premier Zhou devoted himself. Premier Zhou pointed out that the four systems of the Northeast, petroleum, coal, forestry, and agriculture, the cities and the countryside in new style enterprises that help production and make living convenient. On his visit to the Shihezi reclamation region in Xinjiang, Premier Zhou especially emphasized that no large cities should be built, that control should be placed on population growth in Shihezi, that the focus be placed on construction for agriculture and livestock raising, and that attention be given to decreasing differences between industry and agriculture and between the cities and the countryside. Premier Zhou required that the Xinjiang Army for construction of production engage in both agriculture and industry, use profits from industry to strengthen the building of agriculture, do a good job of mechanization and capital construction of farmlands, hasten the development of agriculture, and use industry to promote agriculture.

During the 20-year period 1954 to 1974, the original Xinjiang army for construction of production used 2.8 billion yuan for investment in capital construction, of which one-half was derived from profits earned from its own industry, transportation, construction, and commerce. When Premier Zhou visited the army in 1965, he approved the army's not having turned its profits over to the state, using the "snowball" effect instead to continue to develop the building of industrial and agricultural production.

Many of our state farms are following the request of Premier Zhou to build small cities and towns characterized by combining the city and the countryside, and industry and agriculture where industries, shops, schools and hospitals operate to serve as the center of economic and cultural activities for the broad masses of workers.

Need for Greater Production of Rubber for the Motherland

The production of natural rubber has been a gap in China since Liberation. In 1951, planting of rubber was begun on Hainan Island under the direct leadership of Comrade Ye Jianying. Premier Zhou also expended untold energy on the development of our own rubber enterprises. There was nothing that Premier Zhou did not personally concern himself with, from the formulation of plans for rubber development to the building of production, to mechanical equipment and management. Premier Zhou also personally summarized for us the scientific experiences for growing rubber of "dig large holes, heavily fertilize, build terraced fields, create shelter forests against the wind, and grow plant cover crops." In February 1960, Premier Zhou personally went to Hainan Island to inspect the rubber farms, traveling over almost the entire island. At the Xilian Farm, Premier Zhou joyously said: "We have our own rubber trees and we must produce more rubber and better rubber. Our country greatly needs rubber!" Premier Zhou also wrote an inscription for the farm that read, "Xilian treasure island, pearl of the southland."

When inspecting the South China Tropical Crops Institute and the Tropical Crops Institute, Premier Zhou said joyfully: Hainan Island is truly a treasure

island. He encouraged everybody to unswervingly adhere to the path of a combination of industry and agriculture and to make a greater contribution to the development of the motherland's tropical crop endeavors. The premier also personally wrote the verse, "Go to work in Danzhou [an area in Hainan Island] and put down roots in treasure island." In April 1961 during his visit to Xishuangbanna, Premier Zhou inspected the Tropical Crops Institute and the Jinghong Farm. At the farm, the premier stroked a rubber tree and said with deep feeling: "This tree is our own and you must be sure to take good care of it so that it produces a lot of rubber for the motherland." "Rubber is an important strategic good which is very much needed in the state plan and in the livelihood of the people. Comrades, think of the terrible amount needed for every person in the country to have one pair of rubber shoes. Right now China's rubber production does not amount to much, and the imperialists have blockaded us. We must follow the instructions of Chairman Mao to become self-reliant and develop the young rubber industry of our motherland. There are not many places where we can grow rubber. Here in Xishuangbanna the soil is good; the climate is good; and the responsibility on the shoulders of you comrades is great." The young rubber trees that Premier Zhou saw have now become a luxuriant rubber forest that continuously provides the motherland with large amounts of rubber. Under the loving care of the old generation of proletarian revolutionaries, our natural rubber industry has vigorously developed.

In February 1966, Premier Zhou listened raptly to a report from comrades in Guangdong and Yunnan on rubber production there. The premier repeatedly emphasized the need to learn humbly from the experiences of others, to fully summarize one's own negative and positive experiences, not to repeat the mistakes of the past, not to make any more detours, and to tell others of the detours one has taken. Premier Zhou also spoke of Mr Chen Jiageng's [7115 0857 1649] views that rubber plantations should be kept clean, should be kept clear of stumps, should not be overgrown with weeds, and should have shelter forests. [Mr Chen Jiageng, deceased rubber baron of Malaysia and Singapore, is better known as Mr Tan Kah-kee, the Hokkien reading of his name].

Need To Carry Forward the Nanniwan Spirit in Building Farms

Premier Zhou instructed leadership comrades of all echelons on the farmland reclamation front that our construction of our great motherland is an arduous struggle requiring determination for arduous struggle and no helter skelter action; otherwise what our generation builds, our generation may also destroy. Premier Zhou also pointed out that farm reclamation is community undertaking with a common failing, namely great expense. Reclamation units should give urgent attention to administration and management, institute increased production while practicing economy, oppose extravagance and waste, and reverse losses within a limited period of time. He also emphasized that in the building of farms, the fine tradition of self-reliance must be brought into play; the spirit of Nanniwan must not be lost, and if lost it must be restored.

Premier Zhou particularly emphasized the need to organize the dependents of workers so that they will be able to contribute their own strength to the building of socialism. At present, many farms throughout the country have organized dependents, some of them to handle livestock production, some to handle industrial sideline production, and some to do work of a service nature. They carry out a system of collective ownership, calculate workpoints on the basis of work done, and bear responsibility for profits and losses. In this way not only is the problem of employment for the dependents of workers solved and the income of workers increased, but workers' dependents become a major force in the development of diversified operations on farms and create wealth for the country.

Premier Zhou showed great concern for relations between farms and surrounding communes and brigades. Following receipt of a report from a rubber reclamation area in 1966, Premier Zhou pointed out that action should be taken to have farms work together with communes both to develop rubber, increase production of grain, increase the income of the masses, and to make for good relations between the farms and the communes. The premier also reminded us that in promoting this form of farms working with communes, the masses would have to practice self-reliance and not lie back on the corpus of the state. Mechanized farming would also require collection of costs involved. He also pointed out that communes and brigades linked to farms would still have a system of collective ownership with calculation of workpoints on the basis of work done. The premier also instructed us to diligently summarize experiences in this regard and set up several alternative ways of doing things. In accordance with the instruction of the premier, quite a few farms linked to communes and brigades throughout the country instituted a unified leadership and separate accounting, with the farms supporting the development of commune and brigade production, strengthening the commune and brigade economies, increasing commune members' incomes, and developing a close relationship between the farms and the communes.

A look back on the course of the struggle on the farm reclamation front has made us realize more deeply that it was under the leadership and loving care of Chairman Mao, Premier Zhou, and the older generation of proletarian revolutionaries that the broad masses of workers arduously struggled and practiced self reliance to build more than 2500 farms on barren plains, in marshes, on deserts, and along sea beaches. It was only through their efforts that it was possible annually to tender to the state more than 3 billion jin of commodity grain as well as other farm and livestock products and industrial products to make a steady contribution to the country. Since the smashing of the "gang of four," the disarray at state farms has been removed and normalcy returned. Production has been revived and developed, and administration and management have been improved. In a comparison of 1978 with 1976, loss figures for state farms nationwide declined 80 percent, and last year the loss stigma was fully removed. At the present time, the entire party and country is in the process of implementing a shift in the work focus, carrying out policies of readjustment, restructuring, consolidation, and improvement to place the national economy on a sustained track of highspeed development in a first campaign to realize the four modernizations. Under

the leadership of the Party Central Committee, we must be of one heart and one mind, go all out, and strive to make the building of state farms become high in labor productivity, in their commodity rate, and in their rates of profit so that combined argicultural, industrial, and commercial socialist modernized agricultural enterprises will become bases for commodity grain, industrial raw materials, non-staple foods for cities, and export goods for foreign trade. We are deeply confident that the goal of combat on the farm reclamation front will definitely be attained, and that farm reclamation soldiers will definitely be able to make new contributions in the battle to realize the four modernizations.

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BRIEFS

RICE PADDY FLOATING TRACTORS--Beijing, 17 Oct (XINHUA)--Chinese engineers have developed a new principle for constructing more efficient tractors used in rice paddies by making use of the bouyancy of the muddy water. A 12-horsepower tractor constructed under what is called the "floating-semifloating" principle does as much work as 3 walking tractors of the same capacity designed for paddy use, and more than a conventional 20-horsepower tractor adapted to paddies. According to an engineer attending the 1980 annual meeting of the Chinese Society of Agricultural Machinery which closed in Beijing today, this was confirmed through comparison tests made between 1979 and 1980 in Hubei, Zhejiang and Guangdong provinces, which are major rice producing areas in southern China. Senior engineer Wang Wenlong of the Loyang Research Institute of Tractors was the first to develop the principle. The tractors, he said, are kept half afloat by a boat or a sled and propelled by wheels. In China, they are called "ji geng chuan" or "boat tractors." [Text] [OW201521 Beijing XINHUA in English 1224 GMT 17 Oct 80]

CSO: 4020

BRIEFS

BEIJING DIARY SHOW--Beijing, 15 Oct (XINHUA)--A 5-year-old Frisian hybrid cow carried off the top prize of 1,000 yuan and a cloisonne cup today on the final day of the Beijing dairy show which has been running for 8 days. More than 10,000 milkers from 11 state farms and 35 dairy farms in the Beijing area were entered in the competition and 94 won through to the final round. The champion, a mixture of the Frisian and Heilongjiang breeds, was selected for her appearance and annual milk yield, estimated at over 10,000 kilograms. The "high-yield and long-life" trophy went to a Frisian milker which is still a big producer and has calved 14 times. Farms in the Beijing area have an estimated 18,000 milk cows, 12 times the figure in the 1950's, and they produce 59.5 million kilograms of milk annually. This is still not enough to meet the city's demand for milk. [Text] [Beijing XINHUA in English 1226 GMT 15 Oct 80 OW]

CSO: 4020

GUARDING AGAINST COLD DAMAGE TO RICE

Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 10 Apr 80 p 1

[Article by Li Yizhen [2621 5030 3791]: "Analysis of Cultivation Techniques for Bumper Rice Output"]

[Excerpts] Double cropping of rice in our province is done on 72.5 percent of the rice growing area. This percentage has endured for 9 years. Four hundred million mu of single crop ricelands are distributed in fields that depend on rainfall and fields on the porifera of high and low mountain areas. Both the proportional area and the pattern of cultivation are substantially sensible, so further efforts will have to be concentrated on per unit yields. A great imbalance currently exists everywhere in per unit rice yields. Per unit yields in Longhai County of 800 jin are 60 percent above the average level throughout the province, while per unit yields from small areas amount to as much as 1,600 jin, which is double the local yield. An extremely large potential for increased output exists.

Damage to rice crops from the "three colds" is of long standing. In 1966, the occurrence in the same year of both rainy season [April and May] cold and autumn cold resulted in greatly reduced output throughout the province. Following changes in the wide area system, virtually every year some cold damage occurred. In 1971, 1.2 million mu of the late rice crop was damaged by autumn cold; in 1972, a rotting of rice seedlings as the result of springtime cold took place on 1.2 million mu. In 1974, springtime cold caused more rotting of seedlings; and in 1975, the early rice crop was again smitten with the rainy season cold. In 1976, the occurrence of both the 'return to cold in spring' [0227 2504 1383] [usually occurs in April] and the autumn cold caused a loss of 67 million jin of early crop rice and the abortion from cold damage of 1.5 million mu of late rice. In 1979, another 1.6 million mu of late rice suffered cold damage. In the 9 years since 1971, there have been 4 serious occurrences of 'return to cold in spring,' 2 occurrences of rainy season cold, and 3 occurrences of autumn cold. In Japan too, cold damage occurs regularly, principally to single-crop rice, and on an average of once

every 4 years. In Hokken Prefecture on Hokkaido, cold damage was extremely severe in 1956 causing average per mu yields of only 8 jin. A meteorologist has predicted increasing coldness of the climate over the next 20 years.

'Return to cold in spring' occurs every year, and a really serious 'return to cold in spring' occurs once every 2 or 3 years resulting in rotting of seedlings over a wide area.

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USES, EXPERIMENTS OF HETEROSES IN HYBRID RICE

Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 10 Apr 80 p 18

[Article by Lei Jiecheng [7191 2212 2052], Rice and Cereal Grains Institute, Fujian Provincial Agricultural Academy: "Tentative Ideas About the Uses and Study of Heteroses in Hybrid Rice"]

[Excerpt] In the spring of 1974 the first male sterile lines, V41A and V20A were bred in Fujian Province to bring about a coherent matching of 3 lines. This matching produced the 3 combinations Siyou No 2, Siyou No 3, and Minyou No 3. In 1974, hybrid rice was field tested as a late crop on 5 mu. In 1975, the field testing was done on 71 mu; in 1976, hybrid rice was demonstrated on 50,000 mu; in 1977, its cultivation was extended over 2.48 million mu; and in 1978, it was grown on 8 million mu. In 1979, this was expanded to 9.15 million mu in which Siyou No 2 predominated, but with Minyou No 3, Weiyou, and Shanyou also occupying a certain area. A look at harvests in all places showed general increases in per mu yields of from 100 to 150 jin over conventional varieties with high increases in yields totaling more than 200 jin. These were even 10-fold increases. There were also instances in which bumper crop stretches produced from 1,200 to 1,300 jin per mu from a single crop, or in which high yield fields produced from 1,500 to 1,600 jin per mu. The masses said with praise: "Per mu yields of 800 or 900 jin are common; yields of 1,000 jin occur; and yields of 1,200 or 1,300 jin are not rare."

Superior hybrid varieties carry a heavy burden for increased yields of grain. The situation for increased output since 1978 shows that the average per mu yields of 649 jin from 300,000 mu of early hybrid rice in Longyan Prefecture amounted to increased yields of 167 jin per mu over the average 482 jin per mu yields from more than 1.3 million mu of conventional early rice. Average yields per mu of 474 jin of late hybrid rice from 500,000 mu amounted to increased yields per mu of 114 jin over the average per mu yields of 360 jin from 500,000 mu of conventional medium maturing late rice. In Sanming Prefecture, increase in yields

to 110 million jin of hybrid from 1.58 million mu amounted to 55 percent of the total 1978 grain output of 200 million jin for the entire prefecture. In Jianyang Prefecture, increase in yields to 120 million jin of hybrid rice from 2 million mu of land amounted to 60 percent of the total grain output of 200 million jin for the entire prefecture. The total hybrid rice area throughout the province amounts to one-third the total area sown to rice, while the increased output from the hybrid rice amounts to half the increased output of grain throughout the province. This plays a major role in the realization for the first time in our province of surpassing the "program" for per mu yields.

The 1.25 million mu of hybrid early rice grown in Fujian Province during 1979 amounts to an expansion by 150,000 mu over 1978. This has, in short, played a role in the increased output. But the increases have been manifested differently in separate areas. In southern Fujian, yield areas have registered markedly increased output from large areas. In Longhai County, some production brigades have planted nothing but hybrid. Per mu yields of 1,100 to 1,200 jin for a single crop were harvested by the entire brigade, and 14 different places had per mu yields of more than 1,500 jin. The highest was 1,646.8 jin per mu. In these places, the area planted to hybrid rice is becoming ever greater. Meanwhile, in mountain areas, there has been an almost universal incidence of rice blast, mostly in Siyou No 2 and Siyou No 3. Output has not been high, and reduced output has even occurred. As a result, the area planted to hybrid rice in these places has shrunk.

A proper view of hybrid rice must be maintained. Experiences with hybrid rice output on hundreds of millions of mu of land throughout China attest to the strong heteroses of hybrid rice. These heteroses have played a real role in bringing about increased output in many places, and the cultivation of hybrid should be promoted. The principle problem is the exclusive cultivation of one variety, a problem on which research must be intensified.

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BRIEFS

HYBRID RICE GROWING--Test planting and demonstration of hybrid rice began in our prefecture in 1976. By 1978, cultivation of hybrid rice had spread over 1,908 million mu throughout the prefecture. Of this total 1.48 million mu was in double-crop late rice, accounting for 69.4 percent of the total double-crop late rice area in the prefecture. Yields per mu averaged 427.7 jin, an increase of 113 jin per mu over conventional varieties. By 1979, cultivation of hybrid rice had been extended to 2.177 million mu, of which 1.742 million mu was double-crop late rice, or about 80 percent of the double-crop late rice area. An overwhelming majority of prefectures harvested strikingly increased output, but some areas that had not mastered the characteristics of hybrid rice and the peculiarities of its cultivation techniques were unable to derive fullest advantage from it. Consequently, increases in yield were not great or there were no increases in yields at all. In terms of current levels of production, a fairly great disparity exists in per unit yields of hybrid rice throughout the prefecture. Highest per mu yields are 1,446 jin and lowest per mu yields are 300 jin. Therefore, a great potential exists for increases in per unit yields of hybrid rice. Some ideas are given below for high output cultivation of hybrid rice that are based on the overall cultivation system of the past several years [Excerpt] [Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 10 Apr 80 p 11] 9432

FUJIAN REVOLUTIONARY BASES--In 1979 and 1980, the state appropriated 16.5 million yuan to help build up old revolutionary bases in the west of Fujian. The money has been used for agricultural development and for promoting diversification and increasing the income of the peasants. [Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 8 Oct 80 HK]

CSO: 4007

MEASURES TO INCREASE SUGARCANE PRODUCTION DISCUSSED

Five-Point Program

Guangzhou NANFANG RIBAO in Chinese 4 Aug 80 p 2

[Article by Nong Wen [6593 2429], Provincial Agricultural Department: "Give Attention to the Development of Guangdong's Great Special Advantage, Sugarcane Production"]

[Text] Cane sugar is the great special advantage of Guangdong Province, and rapid growth of cane sugar production has extremely great significance for the rapid development of the economy of Guangdong.

Since liberation, cane sugar production in Guangdong has grown quite rapidly. In 1978, annual sugar output exceeded 1 million tons, and the area planted to sugarcane increased 5.6 times over what it had been in 1949. Both total output of sugarcane and output of sugar increased 12-fold, and average yields increased from 3,000 jin to more than 6,000 jin per mu. But Guangdong's production of cane sugar is very erratic, and during the past several years there has been a tendency toward decline. The reasons for this are numerous, but most important has been the numerous changes in government policies. During the 1970's, four of the seven changes in sugar cane policy in our province took place in a period of close to 2 years. The numerous changes in policy impaired the confidence of the farmers for the development of sugarcane production. The area planted to sugarcane and sugarcane output quickly underwent great decline, especially when policy changes damaged the farmers' welfare so that producers could not make a profit. Additionally, the pattern of production and the system of production contained elements that were not helpful to the development of sugarcane production.

How can all the positive elements be readjusted so that sugarcane production in Guangdong Province will increase? We feel that the following important measures must be adopted.

1. Return a portion of profits from cane sugar industries and businesses to the farmers so that the producers will stand to gain, thereby stimulating enthusiasm for more planting and better cultivation of cane. In the present distribution to agriculture, industry, commerce, public finance, and taxes of money received from the sale of sugar, the farmers' earnings

are excessively small. A portion of the sugar refineries' net profits must be returned to the farmers, thereby increasing by several yuan the price paid for each ton of cane. In order to make up for the reduction in sugar refinery profits, a portion of profits going to the commercial units may be used to compensate the sugar refineries. In so doing, no change will take place for the time being in the sugar refinery system. Commerce will be supporting industry, and industry will be supporting the farmers. In returning a portion of profits to the farmers, it may appear that the state will sustain a reduction in income, but in fact, as a result of the arousal of farmer enthusiasm for growing sugarcane and the resulting increase in the planting and care of sugarcane, the state will greatly increase its income from increased cane sugar production.

2. Institution of a policy of a ton of grain for a ton of sugar. Reasonable basic figures on the marketing of sugar have to be worked out whereby an award sale of grain should be made for each excess ton of sugar brought in (with each ton of sugarcane calculated as producing 230 jin of sugar). The basic figures must exclude sugarcane grown on private plots, sugar retained under the policy for groups, and temporary increases in the amount of sugar brought in. Rational readjustment should be made in base figures so that counties, communes, and production brigades will have production goals they can exceed, and so that accountability for county fulfillment of production and for meeting state purchase levies will be borne by production teams in a system of rewards and punishments, in which award sales of grain may equal government grain procurement quotas. In consideration of the grain-eating habits of the masses in Guangdong Province, implementation of a ton of grain for a ton of sugar will require bringing in mostly rice. If importation of rice into the province poses problems, some wheat and corn may be imported, using some corn and wheat to replace feed grains and to replace award sales of paddy rice for pork. Additionally, a policy should be worked out giving priority to areas where sugarcane production is concentrated.

3. Do a good job in the distribution of sugarcane production and in building cane sugar production bases. A great deal of untapped potential still exists in both the soil conditions and sugar refinery equipment in Guangdong Province, as for example in the Zhujiang Delta, where there are more than 6 million mu of sandy reclaimed fields. Figuring crop rotation once every 4 years, between 20 and 25 percent of the paddy fields would be suitable for the growing of sugarcane. By doing this, 1.5 million mu of sugarcane could be grown annually--an expansion to 800,000 mu from the 600,000 mu of paddy fields in which sugarcane is currently being grown. Additionally, there are almost 200,000 mu of reclaimed land that is salty in Foshan Prefecture, and on both banks of the eastern branch of the Zhujiang there are 500,000 mu of paddy fields that are frequently inundated, with a loss of the crop. Furthermore, there are low-yield rice fields everywhere that are suituable for the growing of sugarcane. By changing these fields to the growing of sugarcane, their advantages could be exploited while avoiding their disadvantages, and greater economic benefits could be derived.

Growth of sugarcane production requires taking hold of key points. The sugar output capacity of the counties of Doumen, Zhongshan, Panyu, Dongguan, Xinhui, Shunde, Huiyang, Xuwen, Suiqi, and Jieyang amounts to half that of the entire province. A priority in policy must be accorded these key sugarcane-producing counties, while at the same time they must be given priority supply of production materials in order to permit the earliest improvement in sugarcane varieties, in the use of chemicals, in water conservancy, and in mechanization, so as to increase the rate of productivity and the community rate.

4. Increase sugarcane output per unit of area. Vigorous efforts must be made to promote superior varieties, with particular emphasis on intensified promotion of early maturing varieties with high sugar yields. There has to be prompt supply of chemical fertilizers and additional applications of phosphate and potash fertilizer. In order to control insect pests on sugarcane, there must be active importation and test production of high-potency pesticides such as furadantin. Water conservancy projects have to be built in sugarcane-base counties, and spray irrigation should be brought in little by little. In places where conditions permit, there should be appropriate experimental plantings of summer-growing sugarcane in certain proportions.

5. Reform of the existing management system. The present system does not suit the development of sugarcane production in Guangdong Province. Prominent problems currently are: the units principally responsible for production have no voice in the setting of policy; units responsible for deciding policies give a lot of attention to the quota points of view and the points of view of business, but they give little consideration to arousing the enthusiasm of producers. This state of affairs must be changed. Establishment of a sugarcane production committee composed of agriculture, light industry, and business sectors is recommended. Alternatively, establishment of a sugarcane administrative bureau for unified guidance of sugarcane production is recommended. The main function of these organizations would be to investigate and study, to formulate policy, to allocate the production materials used in sugarcane production, and to assure the smooth development of sugarcane production.

Use Bagasse in Textiles

Guangzhou NANFANG RIBAO in Chinese 4 Aug 80 p 2

[Article by Zhong Yukun [6945 3768 2492], engineer, Provincial Scientific Committee: "Make Full Use of Bagasse Resources To Develop Manmade Fibers"]

[Excerpt] Guangdong Province has abundant sources of bagasse. Quantities are large and concentrated, the price is cheap and it is easily obtainable. At the present time, each mu of land in Guangdong Province produces between 2.5 and more than 4 tons of bagasse annually. For every 300 to 500 kilograms of white sugar produced, between 600 and 1,000 kilograms of bagasse remain, which is enough to make between 30 and 60 kilograms of manmade fiber,

which is the equivalent of the annual output of bumper harvest cottonfields of somewhat more than 1 mu in area throughout the country. Additionally, byproducts of 25 kilograms of medicines and the raw material xylitol, which has many industrial applications, are produced. Its economic benefits are considerable. At the present time, from the production of about 1 million tons of cane sugar in Guangdong Province, about 2 million tons of bagasse results. This is an astounding amount. Furthermore, use of bagasse as a raw material for the production of manmade fibers, paper, furfural, and fiberboard amounts to only 28 percent of the total quantity of bagasse. The utilization rate is very low, and use of bagasse to produce manmade fiber is even lower, amounting to only 3.53 percent. On the basis of 5 tons of bagasse for the production of 1 ton of fiber--which translates into 7,000 meters of synthetic fiber--6 billion meters of cloth could be produced from the bagasse currently not being used for the production of manmade fiber, an amount sufficient to provide 30 meters to every person in the province. It holds bright prospects for hastening the development of our province's textile industry and solving the problem of clothing its people.

Guangdong Province has an abundance of technicians and a good foundation. Many of the country's technicians and specialized workers skilled in the manufacture of viscose fiber from bagasse are concentrated in Guangdong. Since 1958, our province has built a large number of manmade fiber pulping plants (workshops) and manmade fiber (reeling) plants (workshops), using bagasse as a raw material. Following readjustment, there are now four pulping plants (workshops) and four manmade fiber plants (or workshops). The province is now able to produce more than 6,000 tons of pulp and 10,000 tons of fiber annually. It has more than 2,000 workers specialized in the manufacture of viscose fiber from bagasse. There are also several research institutions throughout the province specializing in research in manufacturing viscose fibers from bagasse; the number of researchers [at these institutions] is several hundred. Our province has a fairly good foundation right now for research into the use of bagasse to manufacture manmade fibers, for teaching, for design, and for the manufacture and installation of equipment.

In order to make full use of bagasse resources and promote the light textile industry in Guangdong, I recommend that the authorities concerned strengthen leadership in research and in production of manmade fibers from bagasse. Research at the present time should be concentrated on studying improvements in the nature of existing varieties of manmade fibers and to lowering production costs to make a breakthrough at the earliest possible time in the quality and economics of their industrial production. In production, scientific readjustments should be made in the layout of production plants. Readjustments should include the establishment of pulping plants as an independent enterprise, to be combined with reeling plants to form an integrated whole. I recommend, in addition, the establishment bagasse raw materials bases to turn out pulp for manmade fibers, with emphasis on the use of advanced bagasse separation methods to help production of manmade fibers. I recommend the strengthening of research on cellulose, bringing it into line with national research plans. At the same time, there should be a great comprehensive effort to use bagasse, improve upon technical equipment, and eradicate the "three waste" pollutants [waste gas, waste water, and industrial residue] from manmade fiber production.

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GUANGZHOU TO BUILD NINE VEGETABLE HOTHOUSES

Guangzhou NANFANG RIBAO in Chinese 15 Aug 80 p 1

[Text] In order to hasten the pace of the modernization of vegetable production in the suburbs of Guangzhou municipality and to provide consumers with more "out-of-season" vegetables, the Guangzhou Municipal Vegetable Company recently concluded a contract with the Provincial Farm Machinery Institute whereby the institute will undertake responsibility for designing and manufacturing nine hothouses for growing vegetables, all of them to be delivered for use during the first 6 months of next year.

Use of hothouses to grow vegetables is the most advanced technology in modern agricultural production. By planting vegetables in hothouses, temperatures and humidity may be regulated at will, thereby diminishing the adverse effects and restrictions natural conditions impose. During winter, the melons and pulses of summer may be grown in hothouses, and during summer, winter vegetables may be produced. Furthermore, output can be increased, thereby increasing the utilization rate of the soil and avoiding or diminishing outbreaks of diseases and insect pests. For the purpose of improving the conditions for production of vegetables, Guangzhou municipality's departments concerned have decided to allocate 250,000 yuan for the building of a group of hothouses in the suburbs of the city. Recently the Guangzhou Municipal Vegetable Company concluded a contract with the Provincial Farm Machinery Institute by which the institute would be responsible for designing and manufacturing nine hothouses with a total area of 2,700 square meters. It was agreed that all these greenhouses would be delivered during the first half of next year to the major vegetable growing areas in the suburbs of Guangzhou, namely the Sanyuanli Commune, the Xinjiao Commune, the Wanggang Production Brigade, the Lianxing Production Brigade, and to the Guangzhou Municipal Vegetable Institute to be put into production.

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HAINAN ENLARGES AREA FOR SUMMER, AUTUMN CROPS

Guangzhou NANFANG RIBAO in Chinese 17 Aug 80 p 1

[Article by Jian Chuan [1696 1557] and Huan Mei [3562 5019]]

[Text] Everywhere on Hainan Island efforts are being made to enlarge the area planted to summer and autumn crops to make up for disaster damage done to the early crop so as to harvest a bumper crop in agriculture for the entire year.

According to the most recent statistics, more than 718,000 mu has already been planted to sweet potatoes, corn, gaoliang, cassava, soybeans, and peanuts. Planting of dryland grain has been increased by 341,000 mu and 120,000 mu respectively as compared with the same period last year and the highest year on record. Planting of soybeans, peanuts, and cassava has been increased by 141,900 mu over the same period last year. Additionally, crops grown on slopes such as common sweet potatoes, taro, and betel palms have been further revived.

Ever since last winter no place on Hainan Island has had a soaking rain for 7 months in a row, and this year just at the beginning of the harvest of the early rice crop, some areas were hit with two typhoons, one after another, as a result of which the early rice crop was diminished. In order to make up for this loss and wrest a bumper harvest for the entire year as a whole the Hainan Prefecture CCP Committee convened several meetings of those concerned and adopted the measures given below to do a good job of summer and autumn planting. 1) Continued honoring of the autonomy of production teams with the kinds of crops and the amounts of crops planted being decided by the production teams themselves. 2) Implementation of the collective and the individual at the same time, permitting individual commune members' spare labor to be used to plant crops on unproductive slopes and unproductive land under unified arrangements made by the production teams with the harvest going to whomever does the farming of such land. 3) Continued consolidation and improvement of the various systems of responsibility for production currently in being. Additionally, prefecture agricultural authorities are to allocate a fixed amount of fertilizer per mu on the basis of the actual area cultivated in a given jurisdiction and to assure that harvests go to the tillers. Thanks to a clear guiding ideology, the implementation of policies, and the vigorous arousal of the enthusiasm of the broad masses, progress of autumn and fall planting has been rapid, and quality good.

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rice gruel to piglets has been changed to feeding of a mixture of things including wheat hulls, soybeans, fish powder, and cereals, and a change has been made from the feeding of cooked food to raw food. In this way, feeding of a litter of piglets requires only somewhat more than 100 jin of paddy rice instead of the former 300 jin, and there is a saving as well in both labor and time so that most rural households can now raise one or two sows. Fourth, in counties where conditions are suitable, companies have been set up to breed fowl and livestock. Production and marketing of superior breeds has been put under the unified leadership of the County Livestock Bureau in order to assure the smooth development of livestock improvement work. These views of theirs merit the careful attention of the authorities concerned.

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HUIYANG PREFECTURE EARLY RICE, PEANUT OUTPUT REPORTED

Guangzhou NANFANG RIBAO in Chinese 17 Aug 80 p 1

[Article by Yuan Jinlan [5913 6651 5695] and Liu Yanhang [0491 3601 5300]: "Huiyang Prefecture Shows Striking Successes in the Rotation of Oil and Grain Crops. Bumper Harvests This Year in Early Crop of Peanuts From 400,000 Mu of Wetlands"]

[Text] Huiyang Prefecture has had striking success with this year's early crop rotation of paddy rice and peanuts. Total output of more than 800,000 dan of peanuts were harvested from 400,000 mu of wetlands throughout the prefecture. When added to peanut output from drylands, total output for the early crop of peanuts throughout the prefecture showed an increase of more than 280,000 jin over the same period in 1979, which had the highest level of peanut production ever recorded. Though the area planted to early rice was reduced, total output showed an increase of more than 17 million jin, nevertheless, over the same period last year, and per mu yields exceeded the highest levels ever recorded for the same period.

Almost half of the paddy field area in Huiyang Prefecture were formerly sandy and of low fertility. Annual per mu yields amounted to only 600 or 700 jin. In order to improve the soil structure and increase paddy rice yields per unit of area, the Huiyang Prefecture CCP Committee sent agricultural technicians to some communes in Bolo and Huiyang counties in 1964 to conduct experiments with the rotation of rice and peanuts, which produced remarkable results. In the following year, the total area in the prefecture devoted to rotation of rice and peanuts was enlarged to 210,000 mu, and total output of paddy rice for that year suddenly shot up from 2.23 billion jin to 2.889 billion jin. Nevertheless, during the 10 years of turmoil, this successful experiment was criticized and strangled as a "tendency toward capitalism" that emphasized money and slighted grain.

Once the "gang of four" was smashed, and more particularly during the past 2 years, Huiyang Prefecture has summarized the experiences with rotation of rice and peanuts, and has made new readjustments in the internal structure of its agriculture in a decision to promote a widespread system of rice and peanut rotation. With this in mind, the Prefecture CCP Committee

further implemented a policy of award sales of chemical fertilizer and conversions of peanuts to grain terms. In addition to the giving of rewards in exact amounts for quotas set by the province, they also stipulated that for every 100 jin of peanuts delivered beyond quota, an exchange of 250 jin of paddy rice could be made. As a result of the serious attention given by the leadership, and the implementation of measures, rotation of peanut and rice crops throughout the prefecture has constantly increased. Last year the area of wetlands planted to peanuts amounted to 250,000 mu, and it has been increased by another 150,000 this year. The area of crop rotation between peanuts and rice now amounts to more than 10 percent of the wetlands area of the entire prefecture.

In the course of promoting the rotation of grain and oil crops, Huiyang Prefecture has also given attention to determining the proportion of crop rotation between wet and drylands on the basis of differences in the characteristics of different areas. In the case of areas of low soil fertility from which rice yields are low, crop rotation has been held to from 15 to 20 percent of the wetlands area. In areas of high rice yields, it has been held to from 5 to 10 percent. Experience has demonstrated that this way of doing things not only does not impair rice production, but is also able to take advantage of special local advantages in the promotion of the development of agricultural production.

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BRIEFS

EARLY RICE HARVEST--For over a year Guangdong has been readjusting the agricultural structure in light of actual conditions. Last year nearly 1 million mu of rice fields were planted with other crops. As for this year's early crops, Guangdong again switched 1 million mu of rice fields to peanuts, soybeans and other crops. The rice harvest increased more than 250 million jin over 1979; peanuts increased more than 80 million jin; soybeans increased 15 million jin. [Hong Kong WEN WEI PO in Chinese 25 Sep 80 p 2]

FISH STOCKING—Guangdong Province has released 3 million fish of economic varieties into its rivers for the first time as a means of increasing propagation of river fish resources. As a result of the reclamation of land for fields from along the rivers of Guangdong Province, the interdiction of streams and the building of sluice gates, pollution by industrial waste water, and excessive fishing, a steady decline has occurred in the aquatic resources of the rivers and streams, and some breeds of economic fish are on the verge of extinction. In order to bring about a rapid revival of fish resources, Guangdong Province has recently stepped up propagation in the Tanjiang River in Xinhui County, and in the Lianjiang River in Chaoyang County, releasing many breeds of fish including black carp, grass carp, silver carp, and variegated carp, and common carp. Xinhui and Chaoyang counties have also set up leadership organizations for this work, and have established a government fish administration station, has designated areas forbidden to fishing and times prohibited for fishing, has stipulated the boats and gear to be used in fishing, and has prohibited use of equipment or fishing methods injurious to the fishing industry, resolutely protecting aquatic resources in rivers. The two counties plan to continue to release 10 million fish of different breeds within this year. [Text] [Guangzhou NANFANG RIBAO in Chinese 17 Aug 80 p 1] 9432

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INCREASING AGRICULTURAL RESEARCH, TECHNIQUES URGED

Harbin HEILONGJIANG NONGYE KEXUE [HEILONGJIANG AGRICULTURAL SCIENCES] in Chinese No 2, 10 Mar 80 pp 1-3

[Article by Liu Zuy [0491 4371 5940] of the Heilongjiang Provincial Agricultural Bureau]

[Excerpts] Now, the entire province's per mu yield of wheat has surpassed 200 jin. The sowing area of wheat has also expanded from the over 7 million mu at the time of Liberation to 30 million mu. During the 1960's, as the "8-point policy for agriculture" was implemented on an overall basis, corn and hybrid varieties of sorghum were popularized over large areas and the yield greatly increased. The average single unit yield of corn rose from 160 to 170 jin during the beginning period after Liberation to 335 jin in 1973. During the 2 recent years, the yield broke the record of 400 jin. Popularization of the "double hybrid" varieties was important in enabling our province's total food grain production to break the record of 20 billion jin. In addition, during recent years, we also used agricultural machinery on a wide scale, applied chemical fertilizers, popularized the method of deep and loose plowing launched biological prevention and chemical weeding, improved the sowing method, implemented reasonably dense planting and large area improvements of soil, etc. The popularization and application of these new techniques stimulated the continued development of our province's agricultural production.

Our province has a wide expanse, is relatively rich in natural resources and is one of the nation's important commercial food grain bases. Although for several years agricultural production has experienced greater development, unit yield of food grains is not high, total yield is unstable, there is no diversity, the rate of development is slow, the scope of fluctuations is great, and all of these problems have not been completely turned around. The main reason is that besides problems in the thorough implementation of policy, in agricultural production, the first reasons are mainly an imbalance of agriculture, forestry and animal husbandry, a weak basic construction in agriculture, and the frequent occurrence of such natural disasters as drought and low temperatures

which have caused serious damage. In 1969, 1972 and 1963, low temperatures and drought which occurred during these years reduced the yield by 5 to 6 billion jin. In 1977, drought and such damage reduced the yield by over 5 billion jin. The second reason is the drop in the soil's fertility. Our province was developed relatively late, but because of negligence in preserving water and soil, rough plowing and deficient fertilization, utilization and nourishing of the soil were not coordinated and the soil's fertility dropped drastically. The content of organic substance in the soil of the province was being depleted at a rate of about 0.2 percent each year. Even in places where the level of fertilization was 2,000 to 3,000 jin, the content of organic substances dropped by 0.1 percent each year. The more the land was planted the more infertile the land became. At many places, the land "surface cracked and became yellow." The third reason is the lack of overall adjustment, planning and reasonable exploration and utilization of natural resources. Some localities did not conscientiously implement the principle of planting according to soil conditions and did not fully develop the potential of natural resources to increase production, and some resources continued to suffer damage. The fourth was that the popularization and application of some effective measures to increase yield and new scientific techniques were not widespread enough. Rough plowing and infrequent fertilization brought about a rather common occurrence of lack of seedlings and broken plants. The area of superior varieties that had a relatively suitable maturation time constituted only 59.1 percent of the total area of sowing. Insects and weeds also caused serious damage. Because of this alone, 3 to 4 billion jin of food grains were lost each year.

Increasing the application of organic fertilizers and increasing the organic substances in the soil are measures to increase yield in the current year and are also a basic construction to improve the physical and chemical properties of the soil and increase the soil's capabilities to retain fertility and water. One method is to open up sources of fertilizers on a widespread basis and raise the quality of the fertilizers. The percentage of utilization of sources of farm house fertilizers at present in our province is very low. According to surveys, the percentage of utilization of human waste and urine is only 30 percent. The percentage of utilization of manure of large domesticated animals is only 40 percent. The percentage of utilization of pig manure as fertilizer constitutes only 50 percent. The percentage of utilization of human waste and urine of residents of large and medium cities is even lower but the potential is great. At the same time, preliminary survey of the stored capacity of grass charcoal is over 30 billion cubic meters. In the mountain areas, semimountainous regions, oil-producing areas and mining areas there are 150 to 160 communes that have sufficient wood for burning. The soil's organic substances can be increased by returning stalks to the fields in a big way. There is also a lot of fallow land and in-between fields and infertile land which can be planted or used

for rotational planting of green manure crops. The future of developing marsh gas to create fertilizers is also bright. These sources of fertilizers are widely distributed, plentiful, and of good quality. As long as the basic construction of accumulation and manufacture of fertilizers is strengthened, the specialized teams for accumulating fertilizers are made sound, the reasonable reward for accumulating fertilizers is established, the method of accumulating fertilizers is improved, various sources of fertilizers are fully utilized, then the present situation of a deficiency of human waste and manure as fertilizers and poor quality can be greatly changed and the fertility of the soil can be effectively raised. The second is to exert efforts in raising the percentage of utilization of chemical fertilizers while greatly increasing the use of organic fertilizers. At present, the main problems in the use of chemical fertilizers are improper methods and poor combination of nitrogen and phosphorus. The percentage of utilization of nitrogenous fertilizers is generally only about 30 percent, and that of phosphorous fertilizers is only about 15 percent. On the average, each jin of chemical fertilizers can only produce 2 to 3 jin of food grains. If each jin of chemical fertilizers can increase the yield by 1 jin of food grains, then according to the planned application of 2 million tons of chemical fertilizers in the entire province this year, there will be an increase of 4 billion jin of food grains. To elevate the technique of using chemical fertilizers, scattered application should be changed to concentrated application, shallow application should be changed to deep application, single application should be changed to combined application, all of which will further raise the percentage of utilization of chemical fertilizers. The third is conducting the general survey of the soil well. This is a basic construction project for doing agricultural planning well, implementing scientific planting and realizing agricultural modernization. The CCP Party Central has demanded that the second national soil survey should be completed by 1983. Last year our province conducted a general survey of soils in one county and five communes as testing points and has accumulated definite experience and a backbone work team has been trained. This year, the work must be expanded according to plan. Each level of the agricultural system must strengthen its leadership to tightly grasp training of a technological force and to prepare the materials well according to the unified demands of the CCP Party Central so that this task can be accomplished quantitatively and qualitatively.

The use of seeds is a measure to increase production without large investment but is highly effective and conservative. Generally, it can increase yield by 20 to 30 percent. The use of early maturing and high yielding varieties must be implemented well and cultivation, propagation and popularization of early maturing and high yielding superior varieties must be hastened. This year, the area of planting of early maturing and high yielding superior varieties throughout the province will reach 55 million mu, an increase of 11.3 percent over last year.

At present, the main task is to develop the potential of the superior varieties, organize and adjust them, do the work of caring for the seeds well, prevent the seeds from rotting, carefully select the seeds well before sowing, to carry out the experiment in budding, raise the quality and conserve the use of seeds to assure that all seeds sown at one time will germinate and grow.

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FARMS SINGLED OUT FOR ACHIEVEMENTS IN HOG RAISING

Farm 290 Increases Profit

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 80 p 27

[Article by Li Yongqi [2621 3057 3825]: "Actively Increase 'Three Rates' in Pig Raising To Increase Profits for 5 Years in a Row"]

[Excerpt] The 290 Farm is located on a delta at the confluence of the Heilongjiang and the Songhuajiang. It is a farm that combines agriculture with livestock raising, with the emphasis on agriculture. Cultivated land currently amounts to 600,000 mu; the population is 34,000; and workers number 14,500. During the past 10 years beginning in 1970, the entire farm has had a policy of one pig per person and now this has surpassed two pigs per person. Year after year the farm overfulfills its quotas for the delivery of fat hogs. In 1975, the entire farm began to reverse the situation of annual losses from pig raising to earn a profit from its operations. Between 1975 and 1977, profits totaled 880,000 yuan. During these 3 years, a total of 61,804 hogs were produced of which 51,318 were delivered to the state for a commodity rate of 86.2 percent. In 1978, annual production quotas were overfulfilled, with about 20,000 hogs being delivered to the state. Output value was more than 3 million yuan, for a profit from operations. For many years in a row, this farm has been evaluated by both the provincial and state farm bureaus as an advanced unit in hog raising. In 1978, the State Farm Reclamation Bureau issued it an award as an "advanced unit" in the raising of hogs.

According to statistics from the end of July last year, 18,400 head of hogs were in pens on the farm, of which breeding sows accounted for 1,703 head and males for breeding numbered 188. They have already provided the state with 14,070 head for a 22.6 percent increase over the same period last year to fulfill 93.8 percent of their total planned quota of fattened hogs to be delivered to the state.

Two Women Excel

Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 1, 24 Jan 80 p 24

[Article from Animal Husbandry Section, Junchuan Farm, Heilongjiang Province: "Han Dongying [7281 0392 5391] Raises 140,000 Jin of Fat Hogs in a Single Year"]

[Excerpt] Han Dongying [7281 2639 5391] [character for dong given here differs from that given in title], female stockman of the Ninth Production Team of Junchuan Farm in Heilongjiang Province learned from the experiences in raising large herds of pigs from pig raising expert Gu Xuemei [7357 7185 1188] and made even more spectacular achievements. In 1978, she achieved a 95 percent survival rate in the raising of large herds of hogs and raised a total of 1,047 fat pigs in a single year. She singlehandedly produced 143,000 jin gross weight of pork for the country. During the first 6 months of 1979, she raised another 520 fat hogs, again exceeding the production level of last year to create the highest level of labor productivity in the livestock industry on the road of agricultural modernization.

Han Dongying started work on a farm in 1973. At a pig raising exchange of experiences conference convened by the farm, she was much encouraged upon hearing that Gu Xuemei had raised more than 800 hogs in a single year all by herself. She made up her mind to learn from Gu Xuemei and to make a greater contirbution to socialism. She frequently thought to herself, "Gu Xuemei is a young woman and I am a young woman. Whatever she can do, I can certainly do." She thereupon asked the party branch of the production team for a battle assignment, determined to make an all-out effort at pig raising. During the last half of 1977, she began the feeding of large herds of pigs, achieving a survival rate of 98 percent. Within half a year's time, she raised 384 head of fat hogs. Gross weight of pigs that she had produced by herself totaled more than 53,000 jin.

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BRIEFS

TIMBER UTILIZATION FORUM--The first Heilongjiang provincial forum on multipurpose use of timber concluded in Harbin 10 October. Forum participants discussed the 10-year development program and exchanged views concerning policies on the multi-purpose use of timber. [SK141800 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 11 Oct 80]

SUGAR REFINERIES--Most of the 22 sugar refineries in Heilongjiang Province were operating as of 10 October. The six largest refineries are now processing over 1,500 tons of beets daily. The province's total beet output this year more than doubled the 1979 output figures. [SK141800 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 12 Oct 80]

FARM MECHANIZATION GROUP--On 12 October, Zhao Dezun, secretary of the provincial party committee, and Wang Luming, deputy provincial governor, received the composite work group sent by the Ministry of Agricultural Machinery to assist Heilongjiang Province's farm mechanization. They heard a briefing prepared by the department concerned. They will conduct grassroots research to help mechanize our province's agriculture. [SK 141800 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 12 Oct 80]

RICE HARVEST--Since 15 September, the counties of Tangyuan, Acheng and Wuchang in Heilongjiang have, one after another, started harvesting. According to a survey, this year's rice harvest will again be a bumper one. Total output could hopefully exceed the highest levels in history. This year the actual sown area in Heilongjiang was expanded to more than 4.3 million mu. [Hong Kong ZHONGGUO XINWEN in Chinese 24 Sep 80 p 1]

CSO: 4007

MECHANIZATION OF RICE TRANSPLANTING ON INCREASE

Hong Kong ZHONGGUO XINWEN in Chinese 23 Jul 80 p 3

[Text] The transplantation of paddy rice is a task requiring great labor intensity in China. In order to mechanize rice transplanting, it is necessary to solve, as well, the factorization of the growing of rice seedlings and the standardization of rice seedlings. These problems have found preliminary solution in Hubei, where experiments have been successfully conducted in plant buildings combining the technologies of hydroponic growing of seedlings with the mechanized transplanting of medium seedlings.

The Hubeu Provincial Grain Crop Institute used the facilities of the Wuhan Municipal Automation Institute to conduct experiments in "growing of seedlings in trays without soil, using liquid fertilizer to nurture and strengthen the seedlings with medium seedlings being machine transplanted to open fields." They successfully worked out a new technology for the nurturing of seedlings in fertilized water without soil, thereby creating the conditions for providing the quality of seedlings that could be machine transplanted. The improved seedling transplanting machine of the Hubei Provincial Agriculture Mechanization Institute also was quite successful in transplanting seedlings. The seedling transplanter revolves smoothly, planting seedlings in the fields evenly and symmetrically, earning good marks from the masses.

On the basis of these preliminary successes, growing of seedlings hydroponically at the mechanized seedling plant has been increased, for overall economic benefits in the conservation of labor, the conservation of seedling fields, reduction in waste, and increased labor productivity. Hubei Province intends large area demonstrations, promotion and further increases in the levels of farm technology and farm mechanization.

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BRIEFS

HUBEI SWINE PARASITE DISCOVERY--Wuhan, 17 Oct (XINHUA)--A veterinary scientist in Hubei Province, central China, has for the first time in China discovered two kinds of parasites of swine. One is a fluke in the small intestine (echinostoma melis), formerly believed to be found only in the mongoose and otter, and the other is a stomach nematode (spirocerca lupi), formerly believed to be limited to the dog, fox and wolf. The discovery was made by Zhang Shunxiang, deputy director of a research center of livestock breeding and veterinary sciences in Hubei Province, who examined more than 10,000 parasites collected between 1978 and 1980. Zhang Shunxiang, 48, is a 1956 graduate of the Beijing Agricultural University. His previous discovery was a new parasite in the large intestine of sheep. [Text] [Beijing XINUUA in English 0720 GMT 17 Oct 80 OW]

CSO: 4020

BRIEFS

JIANGXI AGRICULTURAL COURSE--The first study course for Jiangxi provincial agricultural cadres began on 6 October. Liu Junxiu, secretary of the Jiangxi Provincial CCP Committee, (Liu Zhongzhou), deputy secretary of the provincial CCP committee, Zhang Guozhen, vice governor of Jiangxi, and other responsible comrades attended the opening ceremony and spoke. Zhang Guozhen said: At present, the party Central Committee and the State Council attach great importance to training for cadres. We must cultivate more young and capable persons in order to speed up agricultural modernization. There is a total of 47 cadres attending the first course, including experienced leaders of the party organizations concerned. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 8 Oct 80 HK]

CSO: 4007

LIAONING ADOPTS MEASURES TO AID RURAL ENTERPRISES

Beijing RNEMIN RIBAO in Chinese 16 Aug 80 p 2

[Article from Xinhuashe: "Liaoning Opens All Sorts of Channels for Commune and Production Brigade Business Enterprises, Adopting Effective Measures and Coordinating Pertinent Policies"]

[Text] The Party Committee and People's Government of Liaoning Province recently convened a provincewide Commune and Production Brigade Business Enterprise Work Conference to decide conscientious implementation and coordination of pertinent official policies and to open various channels to enliven commune and brigade business enterprises so that rural villages may become prosperous in the shortest possible time. As a result of diligent discussion by the Commune and Brigade Business Enterprise Work Conference, the following pertinent policies and measures were clearly defined for the current development of commune and brigade business enterprises.

1) Active support to development of agricultural by-product processing industries by communes and brigades through the adaptation of methods to local situations. From now on, all agricultural by-products, forestry by-products, and native products suitable for processing by communes and brigades any place should be actively and gradually changed over toward processing by commune and brigade businesses for processing in a change from rural villages only selling raw materials but doing no processing of them. Active support should be given to communes and production brigades for the processing of commodity grain. From now on there should be no further new construction or extensions of grain processing plants in cities and towns. Grain processing plants established in rural village communes by the state should be operated in a planned way either as joint state-commune enterprises or handed over to the communes and brigades for operation. Following the North China Agricultural Conference, all grain processing plant sites taken over from communes and brigades by grain departments must be returned to communes and brigades for operation should the communes and brigades so demand. Once communes and brigades in forest-lands have fulfilled state procurement plans for lumber, communes and brigades have the right to retain and use in a sensible way all the material removed from the outside of logs, all branches, and surplus forestry

materials, which they may sell as they see fit within the province, or use to operate lumber processing plants, or plants for the manufacture of articles made from wood, or multi-purpose plants. The various wood products produced will be allowed to be sold in city markets or sold elsewhere. In silkworm processing too, support should be given to communes and brigades to do the work themselves. Henceforth, state operated plants may not, generally speaking, increase their silk reeling capacity, chiefly in order that commune and brigade silk reeling enterprises may develop.

Active support to be given commune and brigade construction engineering enterprises and to transportation and loading and unloading enterprises. When evaluation and approval by appropriate authorities has been given, and business permits issued, these enterprises are to be permitted to contract for jobs in capital construction and maintenance and repair in cities. Both year round and seasonal commune and brigade operated transportation units and loading and unloading units may contract for transportation and loading and unloading work in cities.

2) Use of flexible methods to solve some conflicts in the implementation of policies. Coastal areas complain that the tax rate on sun-dried salt is too high. By the time they have deduced costs, they lose money. Consequently commune and brigade salt industries cannot grow and the state collects no revenues, which benefits neither the state nor the people. But tax rates are determined by the state, and local jurisdictions have no authority to change them. Xingcheng County found a flexible way of handling this situation. Using a state regulation whereby poor communes and brigades may reduce or be exempt from payment of taxes, they took 70 percent of the tax monies paid to subsidize the salt sites, with the result that commune and brigade operated salt sites thrived, state tax revenues increased, and both parties were satisfied. Flexible methods may be applied to similar problems to arrive at sensible solutions that help the development of commune and brigade business enterprises.

3) Commune and brigade enterprises must make full use of the regulatory role of markets, and benefiting from the characteristic that "small boats can turn around easily, communes and brigades should adjust the orientation of their production at any given time.

4) Vigorously advocate and actively support joint city-countryside and industry-agriculture enterprises.

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BRIEFS

AGRICULTURE RESEARCH GROUP--The 30-member agricultural research group composed of experts and professors concluded its 1-month-long research in Liaoning Province's sandy and arid western areas. On 11 October the group briefed leading comrades of the provincial CCP committee and the provincial People's Government on methods used to prevent soil erosion. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 11 Oct 80 SK]

VEGETABLE SUPPLIES--The Shenyang Municipal People's Government held a mobilization rally on harvesting and supply autumn vegetables on 13 October. The rally noted that owing to natural adversities, the output of vegetables has declined in the municipality. In view of this, the municipal People's Government urged efforts to adopt flexible measures to harvest vegetables and put them on the market at a proper time so as to prevent rotting. [Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 13 Oct 80 SK]

AUTUMN HARVEST--As of 8 October, Liaoning Province had harvested some 35 million mu of farm crops, which accounts for 72 percent of the total farming acreage under cultivation. Thus, the province has harvested over 1 million mu of land more than it did in 1979. Liaoning Province has already harvested cereal crops and minor oil-bearing crops. It is estimated that the autumn harvest will be completed by 20 October. [SK172330 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 16 Oct 80]

CSO: 4007

BRIEFS

NINGXIA CARP BREEDING--Yinchuan, 19 Oct (XINHUA)--Scientists at an aquatic experimental farm in Ningxia Hui Autonomous Region, northwest China, have begun breeding a rare species of colored Crucian carp found in four lakes in Xiji County. The lakes were formed by a strong earthquake in 1920. The fish, Carassius Auratus Shijyius, are highly decorative, ranging from pure white through yellow, red and purple to pure black. They grow quickly and can attain a weight of around 250 grams. The 4 lakes in Xiji County are estimated to contain about 10,000 Crucian carp. [Text] [Beijing XINHUA in English 0718 GMT 19 Oct 80 OW]

CSO: 4020

BRIEFS

AUTUMN SOWING PLANS--Recently the State Council approved Shanghai's 1980 autumn sowing plans to expand cotton by 200,000 mu and rape by 300,000 mu. This rational readjustment of Shanghai suburbs' cropping system will develop their superior features, allow the peasants to get rich early and benefit the state. This expansion of the planted areas will have three advantages: 1) It will benefit the wet-dry crop rotation by continuing to increase and considerably stabilizing the area's grain output. 2) It will benefit by raising the self-sufficiency level of the municipality's industrial needs for cotton and edible oil and reduce the expenditure of the state's foreign exchange. 3) It will benefit by increasing the collective income of the communes and brigades. According to calculations, the total income from 1 mu planted to cotton after wheat will be about 55 yuan more than from 1 mu triple cropped with grain. The total income from 1 mu of rape will be about 10 yuan more than from 1 mu planted with wheat. [Shanghai WEN HUI BAO in Chinese 24 Jul 80 p 1]

CSO: 4007

PREFERENTIAL TREATMENT IN GRAIN DISTRIBUTION DISCUSSED

Chengdu SICHUAN RIBAO in Chinese 6 Aug 80 pp 1-2

[Article by commentator: "Welfare Is an Official Policy That Must Be Handled Prudently. Third Discussion About Distribution of Welfare Grain on the Basis of Workpoints"]

[Excerpts] In the implementation of welfare measures for the distribution of welfare grain rations on the basis of workpoints, one principle must be adhered to, and that is that these measures must embody distribution in accordance with work done in order to arouse the enthusiasm of commune members and promote the development of production and, at the same time, households enjoying the five guarantees [childless and infirm persons who are guaranteed food, clothing, medical care, housing and burial expenses by the people's communes], families of martyrs and servicemen who lack able bodied workers, disabled military personnel, and households with many members few of whom are able to work must be given welfare and assured their basic needs for grain. These are two parts of an indivisible whole, and one positively cannot give attention to one while ignoring the other.

Some cadres and members of the masses presently have some misgivings about implementation of welfare measures that entail distribution of grain on the basis of workpoints, and these misgivings center on this matter of welfare. For example, some workers assigned to rural villages are fearful that their dependents "will have too few workpoints and thus will not be given sufficient food, which will increase their own economic burdens"; some are apprehensive that old people, children, and others who have lost their ability to work "will not have a basic grain ration and will starve to death"; still other households that have few able-bodied people who can work feel that to accept welfare is "not honorable," or that it is to eat "begrudged grain." One thing giving rise to these fears and apprehensions is lack of familiarity with and understanding of the actual method of welfare in the distribution of grain on the basis of workpoints. Another thing is that in the course of trying out these measures, some places decided on criteria for welfare grain rations that tended to be too low, so the welfare grain that people withdrew tended

to be too little, and the policy for welfare was not sufficiently well implemented. The first of these is a problem of ideological understanding, and the latter is a problem in actual work methodology. The experiences of test sites everywhere have demonstrated that if thorough and meticulous propaganda work is done to explain official policy and to properly resolve problems pertaining to welfare, these fears and apprehensions will be eradicated in the process. The significance of this is that the solution to the welfare grain problem is at the crux of the gradual promotion of these grain ration distribution measures.

If this important policy of welfare is to be made a reality, there have to be concrete methods to match. At the present time, test sites everywhere are giving universal attention to the following several points: First, in most circumstances in which grain rations are distributed according to work points, distribution of grain is best done according to deliveries of manure in order to preserve the original proportions. As regards the amount of welfare grain to be withdrawn, higher authority ought not arbitrarily decide proportions, but should base a decision on the actual requirements of different situations in production teams. Second is welfare criteria. Generosity should be set rationally on the basis of the level of grain production following the principle that the basic needs of households poor in able-bodied laborers should be guaranteed. Appropriate generosity not only does not hurt the welfare of those households with able-bodied workers, but it can also arouse the enthusiasm of more commune members. Third is determination of who should be recipients of welfare and their numbers. Generally speaking, use of year-end appraisal methods are not appropriate to this purpose. Instead, a means of calculation that is in accord with government policies and is convenient, and one that is founded on the establishment of a basic system that takes into account work done and manure provided as well as the grading of the work force should be used to decide. Fourth, no matter the actual method used, it must be practical in terms of the local situation. There can be no "single solution to all problems." The autonomy of production teams has to be respected, with decisions being reached only after full democratic discussion by commune members. Every echelon of leadership should give further study to the various concrete methods created by the masses at test sites, and constantly summarize experience so as to gradually bring about perfection.

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INVESTMENT BY COMMUNE MEMBERS ENCOURAGED

Chengdu SICHUAN RIBAO in Chinese 5 Aug 80 p 2

[Article by Tang Hongqian [0781 3163 3383] and Da Fengquan [6671 7364 0356]: "Commune Members Should Be Encouraged To Invest in Commune Businesses"]

[Text] Recently we encountered a moving example in a rural village of people voluntarily investing in commune and production brigade businesses. The instance occurred in a prosperous area of Xichong County, where a business enterprise integrating agriculture, industry and business carry out seed propagation, breeding of silkworms, reeling of silk and weaving of silk cloth in a continuous process, operating silkworm breeding farms, silk reeling plants, and silk weaving plants for the purpose. Despite investment by the state and by communes and brigades collectively, capital is still extremely lacking. A meeting of shareholders of the integrated business enterprise decided to accept investments by individual commune members, also stipulating that those investing at least 500 yuan could make arrangements for a commune member who met conditions to become a worker. Within a few days, 426 commune members had registered their names, and money paid for shares amounted to 213,000 yuan. Finally, it was agreed that 105 commune members could invest in shares. This kind of example demonstrates that among the farmers there exists an extremely great enthusiasm for socialism and an untapped capital potential. All we need do is have confidence in the masses and in the correctness of policy, linking together investment by commune members with their individual material welfare, and then it will be possible to raise funds that lie idle in the hands of commune members in order to quicken the pace of the modernization of agriculture in Sichuan Province.

Nevertheless, some comrades are opposed to commune member investments in commune and brigade enterprises, feeling that collective businesses operated by communes and brigades should be supported by the state and through commune and brigade investments. If commune members are allowed to invest, the businesses then become "joint public-private enterprises," thereby changing the system of collective ownership and the socialist orientation of the businesses. Division of dividends on invested shares to commune members smacks of "exploitation." We feel this view will not

hold water. Will commune members' investing capital for shares in commune and brigade business enterprises (with enterprises gradually returning the investment in shares depending on how the businesses go), and becoming workers in the plants really change the nature of the enterprise? No, because once the communes and brigades have absorbed the capital invested by commune members, the means of production will still be collectively owned by the working people. The production goals are still the creation of material prosperity for the collective and for society, and the satisfaction of the people's normal material and cultural needs. The output of commune and production brigade business enterprises will also continue to be guided by the state plans. Commune members who invest capital in shares and become workers will still be workers. There will be no change in any of these things. However, the capital invested by commune members in commune and brigade enterprises will undergo a qualitative transformation becoming collective capital owned by the collective, and therefore it cannot change the nature of the collective ownership of commune and brigade enterprises nor their orientation of development.

Periodic payments of certain dividends to commune members who have invested capital in shares according to the amount of their investment following various deductions depending on how well the enterprise was run and how much profit it made is no different from payment by banks of certain interest on the savings accounts of commune members, which is certainly not "exploitation." This is because the dividends paid commune members on their investments derive from the net profits created by the employees of the enterprises, and are a type of distribution of the income of the enterprises. Payment of dividends for investments is a way of providing rewards and encouragement to commune members to practice frugality and thrift, and to actively invest to support the modernization of agriculture. If one claims that payment of dividends to commune investors is a form of "exploitation," then is it not also exploitation when some of the profits obtained from the operation of commune and brigade businesses are returned to production teams where they are distributed among members? Today the working people are the masters of the country; the welfare of commune members and the welfare of the collective are as one. Commune members are both owners of the collective economy and workers in the collective economy, so distribution of a certain amount of profits to shareholders is not exploitation.

Comrade Mao Zedong constantly attached importance to the mobilization of the farmers to invest and develop production. In 1934, he said in "Our Economic Policy," "Reliance on the power of the masses to solve the problem of capital for economic reconstruction is currently still the only possible way." In 1956, he said further, "Properly and not excessively, and only after full arousal of the consciousness of commune members, and under conditions that safeguard the poor commune members, arousing commune members to invest in order to solve the difficulty of a shortage of production capital in cooperatives is entirely possible."

("The High Tide of Socialism in Chinese Rural Villages," Vol 2, p 517, CCP Central Committee Office.) Though the farmers in our province are still not wealthy today, still, in view of the large population, many a little makes a mickle. Even if a commune member's investment is very little, when added all together, the investment funds become impressive. We should review the aforementioned teachings of Comrade Mao Zedong to get a proper understanding of this problem, and to encourage commune members to invest in shares to promote the development of commune and brigade business enterprises.

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MORE TRADES NEEDED TO IMPROVE RURAL ECONOMY

Chengdu SICHUAN RIBAO in Chinese 4 Jul 80 p 1

[Article by Xinhuashe correspondents Liu Bang [2692 2735] and Li Shaozhong [2621 4801 0022]: "The Party Committee of Wanjiang Prefecture Proposes Smooth Flow of Goods on Finance and Trade Front With Broadening of Flow Channels for Commodities To Make Rural Village Economies Lively"]

[Excerpt] The Party Committee of Wanjiang Prefecture in Sichuan Province recently proposed broadening of the channels for the flow of commodities on the finance and trade front and a reduction of intervening links for the smooth flow of goods and further enlivening of rural economies.

Wanjiang Prefecture is situated in the fertile weir irrigation area of the Du River on the western Sichuan Plain. Since the smashing of the "gang of four," agriculture here has had continuous increases in output and in income; the levels of distributions to commune members have risen strikingly, and rural markets have been thriving and prosperous. The proportion of goods produced in rural villages has particularly increased with time. Last year, the more than 27,000 production teams in the prefecture had a total income of 358.1 million yuan from the sale of agricultural by-products, amounting to 38 percent of total output value and representing a 25.6 percent increase over the previous year. Almost all of the 330 million yuan worth of goods from commune and brigade business enterprises was commodity production, an increase of 38.8 percent over the previous year. Output value of commune members' home sideline industries amounted to more than 400 million yuan of which the proportion that was commodity production was also quite large. But along with a liveliness in commodity production appeared many new problems in the marketplace. Agricultural by-products such as the farmers' fat hogs and medicinal materials either could not be sold or the sale price was unreasonably low. Industrial goods needed by farmers such as chemical fertilizers and iron and wooden implements were in a situation in which supply could not keep up with demand. These abnormal states of affairs showed that current channels for the circulation of commodities are not sufficiently unimpeded, and that the commercial system is not entirely rational, which is not helpful to the further prosperity and development of the rural economy. Last year, the farmers in Guan County had on hand medicinal

materials valued at around 400,000 yuan that they were unable to sell. In another case, right at the March and April busy period of spring plowing, rural villages in Dayi County urgently needed more than 8000 tons of chemical fertilizers, more than 4000 plowshares, and more than 3000 harrows, which supply organizations had not brought in. People discussed the situation agitatedly, criticizing some industrial and commercial organizations for caring only about fulfilling their individual profit quotas, for being indifferent to the view that agriculture is the foundation, and for having lost the fine tradition of supporting agriculture. Some commercial units downgraded goods and tried to drive down prices to be paid when buying agricultural by-products, arbitrarily suspending purchases and refusing to buy. Sometimes they were keen to do business in goods that would have a quick turnover and on which profits would be large, while not actively doing busines business in items that would earn little money, or not actively stocking items that rural villages urgently needed.

The Party Committee of Wanjiang Prefecture took an extremely serious view of this problem and promptly moved to investigate, study, and propose solutions to it. The Prefecture Party Committee called upon rural village as well as pertinent commercial and supply and sales units to use every means at their disposal to open commercial supply and marketing channels, not only so that commodities produced by agriculture that were daily increasing would have markets to go too, but also so that the development of commodity production in rural villages would be further developed. In practical terms, this meant efforts in four different areas. One was that prices paid for the purchase of agricultural by-products would have to be reasonable, and that there could be no downgrading of quality of goods in order to drive down prices, or any refusal to purchase. Two, was proper arrangements for sending people to make purchases and making purchases. There should be no buying of just whatever amount happened to be available. Three, the number of channels should be increased, with communes and brigades themselves being allowed to handle commerce; and four was the need for reduction in the number of intervening links, and no setting up of layer after layer of chokepoints that impede the flow of commodities.

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TUNG OIL OUTPUT DROPS IN WANXIAN PREFECTURE

Chengdu SICHUAN RIBAO in Chinese 4 Jul 80 p 2

[Article: "How To Solve the Problem of a Decline in Tung Oil Output in Wanxian Prefecture"]

[Excerpt] In Wanxian Prefecture, the number 1 tung oil producing area in the country, more than 80 percent of all communes and production brigades cultivate tung trees. The counties of Wan, Yunyang, Kai, and Fengjie, which produce between 10 to 20 million jin of tung nuts annually, are tung oil production base counties for the entire country. During the early period following Liberation, the entire prefecture had more than 40 million tung trees. Later on, this number was increased to more than 120 million. For many years the tung oil of Wanxian Prefecture has played a great role in supporting foreign trade exports, in increasing the income of the people of mountain areas, and in promoting industrial and agricultural production. According to statistics from the departments concerned, during the 29-year period from 1950 to 1979, average annual state procurement of tung nuts from the entire prefecture amounted to 70.8 million jin, providing the state with more than 21 million jin of tung oil, which was 10 percent of the national output of tung oil. During the 25-year period from 1952 to 1976, exports of tung oil averaged 11.44 million jin annually, or about one-fourth of total national exports.

However, an overall look at the situation since Liberation shows that not only has development of tung oil in Wanxian Prefecture been slow, with wild fluctuations, but there has also been a trend toward decline. During the 1950's, tung oil developed very rapidly throughout the prefecture with the quality of state procurement averaging more than 80 million jin annually. In 1955, the year of highest output, it amounted to 118 million jin. After the 1960's, it declined to an average of 63 million jin annually, with the lowest amount being in 1960 and 1961 when the quantity purchased by the state amounted to only between 25 and 26 million jin. The years 1977 and 1978 saw a revival, but last year another large-scale decrease occurred, with only 25 million jin being purchased, 34.52 million jin less than the average quantity purchased annually since Liberation. Investigation shows the decline in

output of tung oil attributable to many reasons, including one-sided ideological understanding, problems with emphasis on grain while slighting tung, problems in lack of planning and scientific management, and problems in administration and a system. But most fundamental has been the existing economic policies pertaining to the production of tung oil, which are not able to preserve and arouse the enthusiasm of the farmers to develop tung oil.

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SPRING COCOON OUTPUT--Spring cocoon output in Sichuan Province has been very good. This spring more than 1.1 million trays were set out and 720,000 dan of spring cocoons harvested. Silkworm production in Sichuan has a history of more than 4,000 years. Production areas, which were located in more than 20 counties along the Fu, Min, Jialing, and Yangtze rivers before Liberation, have expanded into a total of 156 counties in Yibin, Chongqing, Leshan, and Wanxian prefectures. Output continues to increase in the old areas, while development of the new areas is rapid. At the present time, counties throughout the province with an annual output of 10,000 dan of cocoons number 35, and those with an annual output of 30,000 dan of cocoons number 15. Sichuan currently has 1.5 billion mulberry trees, and a great untapped potential for cocoon production still remains. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 23 Jul 80 p 3] 9432

CSO: 4007

HANGZHOU SUFFERS VEGETABLE SHORTAGE

Hangzhou ZHEJIANG RIBAO in Chinese 29 Aug 80 p 1

[Text] Torrential rains and low temperatures have seriously damaged Hangzhou's vegetable bases, sharply reducing the daily supply of vegetables to the markets. Commercial units and agricultural units concerned in Hangzhou are now taking urgent steps to try to ameliorate the acute scarcity of vegetables.

The four fresh vegetable wholesale units of the Hangzhou Municipal Vegetable Company have sent out more than 50 vegetable buyers to various places inside and outside Zhejiang Province to make active purchases of vegetables. They have already made arrangements for the supply to markets during September of winter melons, red onions, fresh lotus roots, and potatoes amounting to more than 60,000 dan in all. More than 40 retail vegetable farms throughout the city have also acted to buy various kinds of vegetables and aquatic products from elsewhere.

Foodstuffs units have made a special allocation of 1 million jin of soybeans that had been purchased at negotiated prices. Some 800,000 jin of these were used to increase output of things made from soybeans, which will be offered to residents of the city at posted prices in September. The remaining 200,000 jin of soybeans will be used to produce about 1.3 million jin of beansprouts.

Agricultural and commercial units in Hangzhou have made arrangements to send some late maturing varieties of vegetables to market ahead of time, properly increasing subsidization over and above listed price. Additionally, agricultural units concerned are striving to intensify field care, rush planting quick-growing leafy vegetables such as summer green vegetables and fresh greens.

Zhejiang Province has had a problem in the supply and marketing of vegetables for a long time. Every time there is ruinous weather, the conflict becomes especially prominent. It is hoped that the leadership authorities concerned will consider carefully and take rapid action to solve the "long standing and difficult" problem of vegetable supply being less than demand.

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SWEEPING PANICLES WITH PALM FRONDS INCREASES RICE POLLINATION

Hangzhou ZHEJIANG RIBAO in Chinese 27 Aug 80 p 2

[Article by Gao Mouren [7559 6180 4457] and Gan Songlin [3927 2446 2651]]

[Text] The Ningbo Prefecture Agricultural Experimental Farm began experiments in the winter of 1978 on ways to increase the fruiting rate in the pollination of hybrid rice. Following year-round experiments over a period of 2 years in the breeding of hybrid rice seeds containing three genetic lines and in the purification and rejuvenation of lines, they managed to greatly increase the fruiting rate in the pollination of hybrid rice by using palm frond brooms to sweep the panicles. A single person can generally sweep from 4 to 5 mu between 0500 and 0900 or so, which is a great saving in labor over debudding. Average per mu yields from the more than 340 mu of spring seed propagation fields at the farm amounted to 170-180 jin this year, and both per unit yields and total output were double that of last year.

Why does using palm frond brooms to sweep the panicles so remarkably increase seed propagation and the output of breeding fields? Investigation and analysis has shown that the main reason is that sweeping of the panicle causes the male sterile panicle, which is in the shape of the clumped hairs at the end of a writing brush, to open up and become fluffy, thereby increasing more than threefold the area for pollination, and the degree of constriction of the neck of the sterile line is reduced from the original two-thirds to less than one-third, acting in the way that debudding does. The sweeping away of dew from the panicle and from the tops of the panicle leaves increases the temperature around the panicle, which can advance the time of blossoming from between 0.5 and 1 hour, thereby promoting a convergence in the time of blossoming of the male and female parent.

Proper selection of tools to be used in the sweeping of panicles must be made, and if sweeping is done too softly, the effect will not be very great. If, however, sweeping is too hard, the panicles may be easily damaged or broken off, and the incipient branches pulled out.

When sweeping the panicles, both hands should hold the broomhandle tightly in a position perpendicular to the surface of the rice plant, and the surface of the broom should form a right angle to the direction of the rows, and quick and vigorous sweeping of the necks of the full panicles should be done with a forward motion. An even pressure must be applied when sweeping, and the speed must be fast with no sweeping back and forth. Sweeping of the entire seed propagation field may be done two or three times in the course of panicle formation. Between 20 and 30 percent of the panicles being formed will be swept the first time, and between 50 and 60 percent will be swept the second time. Sweeping of the panicles is best done at the time leaves have been cut off or thoroughly slashed, and spraying has been done using 902. After the panicles have been swept, pollen should be promptly la fen [2139 4720] so as to further enhance pollinization opportunities to increase the pollination fruiting rate.

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LOANS TO COMMUNE MEMBERS EXPANDED

Hangzhou ZHEJIANG RIBAO in Chinese 30 Aug 80 p 2

[Article by Lan Feng [5695 7364] and He Yinnian [6378 5593 1628]]

[Text] Throughout this year, agricultural banks and credit cooperatives everywhere in Zhejiang Province have expanded the limits on the uses of loans to meet the needs of growth in sideline occupations by commune families. Loans have been granted to commune families to raise beef cattle, milk cows, milk goats, long-haired rabbits, as well as for duck raising and beekeeping. Loans have also been provided to commune members wanting to build new houses. They have also been granted for use as circulation capital by door-to-door peddlers selling knick-knacks, and to small groups of several commune members who have gone into partnership, combining their capital to operate processing industries together, to open food and beverage shops, to operate stands selling sundries, or to do small repairs, whenever these activities have been approved. As of early August, banks and credit cooperatives had handed out 17 million yuan in loans to commune members, a 70 percent increase over the same period last year. Of this total, 9.5 million yuan was used by commune families to develop sideline occupations, and 2.2 million yuan were loans for the construction of houses.

Banks and credit cooperatives everywhere have helped commune members do whatever it was that has needed doing, in accordance with the different situations in different places, and by adapting methods to local situations to make the most of special advantages offered. In mountain areas, for example, they actively supported development of the livestock industry. In Jinhua County, which is a production base for forage grass and livestock, banks and credit cooperatives issued loans amounting to 419,000 yuan during the first half of this year to more than 1,500 commune member households to raise cattle. This permitted them to increase their herds by 1,543 head. According to a survey of 198 households engaged in cattle raising, which was done by 4 credit cooperatives in Ruoyang, Waifan, Siqi, and Zaozhai, when 205 head of beef cattle were sold after having been fed for 5 months, net earnings after deduction

of expenses amounted to 21,318 yuan (not counting earnings from the manure in the cattle pens) for an average net profit per head of 104 yuan. Statistics from 8 mountain region communes in Shuanglong and Ruoyang show that after commune members had raised calves to maturity and sold them, they were able to repay a loan of 51,000 yuan on time and deposit savings of 95,700 yuan as well.

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II. PUBLICATIONS

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Harbin HEILONGJIANG NONGYE KEXUE [HEILONGJIANG AGRICULTURAL SCIENCES] in Chinese Nos 2-3, 1980

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CSO: 4007

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TITLE: "Formation, Meiotic Stability and Karyotype Analysis of Octoploid Agrotriticum Hybrids"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 3, Sep 80 pp 129-137

TEXT OF ENGLISH ABSTRACT: 1. In this paper we have generalized a diagram for the formation of octoploid Agrotriticum hybrids according to our observation and analysis of chromosome behavior in pollen mother cells (PMC) of hybrids F_1-F_4 of Triticum vulgare x Agropyron elongatum and the hybrid B_1F_1 after backcrossed with wheat for many years. That is to say the hybrid F_1 (BBEEFFAD) obtained from the hybridization of Triticum vulgare (2n = 42, karyotype as AABBDD) with Agropyron elongatum (2n = 70, karyotype as BBEEEEFFFF) has a partial ability to fructify without treatment of chromosome doubling. This is because the three genomes BBEEFF are basically homologous. After selfing and segregation for a considerably long time, an octoploid Agrotriticum hybrid which is intermediate and grass-like with karyotypes of BBEEFFAA and BBEEFFDD may be obtained. Moreover, the backcross of the hybrid F_1 or F_2 with the wheat for one to two

[Continuation of ZUOWU XUEBAO No 3, Sep 80 pp 129-137]

times can lead to genome recombination and form an octoploid Agrotriticum hybrid being intermediate with karyotypes as AABBDDEE and AABBDDFF.
2. We have found that the meiosis of Agrotriticum hybrid (2n = 56) is still abnormal for more than 10 generations, even though it is fundamentally stable. The frequency of univalents in metaphase I (PMC) is somewhat higher, with that of Agrotriticum No 68 (13th generation) being 26.12 percent with 1-2 univalents and that of Agrotriticum No 333 (10th generation) being 60.04 percent with 1-3 univalents. Their percentages of fructification are about 95.54 percent and 65 percent respectively. In addition, we have also observed that the univalents in most of the cells at metaphase I may appear in the nuclei of daughter cells at later stages, but those of a few of the cells still remain within cytoplasm and are to form micronuclei. Eventually, most of the gametes formed are to be functional. However, the gametes with micronuclei and aneuploid gametes formed by random distribution of a few univalents may be poorly developed due to lack of competitive ability or abortion without participating in the fertilization. Objectively this plays a definite role in the maintenance of stability of the hybrid character.
3. By cytological observation of F_1 hybrids from several hybridized combinations in which octoploid Agrotriticum No 68 and No 693, etc., are crossed with each other and crossed with some different wheat varieties, it shows that Agrotriticum No 68 and No 693, etc., contain three genomes AABBDD being the same as wheat

[Continuation of ZUOWU XUEBAO No 3, Sep 80 pp 129-137]

and one genome EE or FF which is peculiar to Agropyron elongatum. Furthermore, their karyotypes have been analyzed.
4. The hybridization of octoploid Agrotriticum with wheat is easily successful. Some alien addition lines and substitution ones have been selected out from the progenies of these hybrids, and it would be possible to select out desirable varieties showing positive transgressions as well. Hence, it is worthwhile to apply this technique to wheat breeding.

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TITLE: "The Relation between Floret Development and Carbon-Nitrogen Metabolism in Winter Wheat"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 3, Sep 80 pp 139-146

TEXT OF ENGLISH ABSTRACT: A three-year study on the relationship between floret development and the application of nitrogen fertilizer in different levels was conducted for winter wheat from 1975 to 1978 in Beijing. The results obtained are summarized as follows:
1. The determining process of grain number in spikes of the wheat plant can be divided into three phases: (1) differentiation phase of floret; (2) polarized phase of floret development; (3) phase of flowering and seed-setting.

[Continuation of ZUOWU XUEBAO No 3, Sep 80 pp 139-146]

2. The total number of florets is relatively stable in the same region every year. The quantity and the time of application of nitrogen fertilizer in spring has no significant effect on the total number.
3. During the polarized phase of floret development (from the expansion of flag leaf to flowering), a large number of florets degenerated. A higher rate of formative florets depends upon an appropriate nitrogen content and a suitable carbon-nitrogen ratio in the wheat plants.
4. The normal morphological florets still degenerated partially in the phase of flowering and seed-setting. The percentage of fructification of these florets is determined by the sugar content in the plants and the sheaths through the expansion of flag leaf to the heading stage.
5. A unity of the rate of formative florets and the rate of fructification reached through the regulation of the sugar and nitrogen content in wheat plants might be the key to the increment in grain number per spike.

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TITLE: "Planting Density and Crop Yield--An Analysis of Quantitative Relationships between Yield and Density"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 3, Sep 80 pp 147-160

TEXT OF ENGLISH ABSTRACT: This paper deals with the mathematical models for determining the optimum densities $x_{opt.n}$ and $x_{opt.e}$ and the ranges at which the maximum Y_n and Y_e could be expected respectively. Let Y be population yield, i.e., final yield per unit area, and x be density, i.e. number of plants per unit area, so that $\frac{x}{Y}$ shows the average number of plants required for getting each unit yield, e.g., 1 kg. According to the quantitative changes of $\frac{x}{Y}$ on x, relationships between Y and x may be distinguished into three different models.
1. The arithmetical model--When x increases a unit, $\frac{x}{Y}$ will increase b units and b is an arithmetical constant. In many circumstances, the model may be applied to describe the relationship between biological yield and density of crops and the equation of yield/density can be expressed by $Y = \frac{x}{a + bx}$ (3.2)
where a is the minimum $\frac{x}{Y}$ as $x \to 0$ and b is the minimum area at which a unit yield is produced as $x \to \infty$.

[Continuation of ZUOWU XUEBAO No 3, Sep 80 pp 147-160]

2. The geometrical model--When x is increased by arithmetical series, $\frac{x}{Y}$ increases by geometrical series. It has been found that the relationship between economic yield and density of corn, soybean and other crops belongs to the model and the equation of yield/density can be expressed by $Y = \alpha x e^{-bx}$ (4.2) where α is the maximum yield per plant at $x \to 0$ and b is the optimum nutrient space per plant at which maximum yield of the population can be expected, and e is equal to 2.71828.

3. The mixed model--This model approaches the arithmetical model when planting density is lower, and it tends to the geometrical model gradually as the density becomes higher. In crops of rice, wheat, etc., the relationship between economic yield and density may be described by it and the equation is $Y = \frac{x}{a + bx^c}$ (5.2) where the biological meaning of a is the same as that in (3.2), b is the difference between $\frac{x}{y}$ as x = 1 and the minimum $\frac{x}{y}$, and c is the regression coefficient of the logarithm of differences between $\frac{x}{y}$ at different densities and the minimum $\frac{x}{y}$ on the logarithm of densities. Two alternative equations may be provided for this model:

$$Y = \frac{x}{a + bx + cx^2} \quad (6.2) \quad \text{and} \quad Y = \frac{x}{(a + bx)1/c} \quad (7.2)$$

Furthermore, the equation of seed weight sown (W) to x is $W = kx$ (10) and the equations of the production expenses accounted for yield (E) to x may be expressed by

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$$E = (px)^{1/2} \quad (11.1) \quad \text{or} \quad E = \frac{x}{1 + mx} \quad (11.2)$$

Thus the equations of both net profit for yield (Y_n) and that for economical income (Y_e) to x are respectively

$Y_n = Y - W$ (12), $Y_e = Y - E$ (13)

In general, $x_{opt.e}$ is less than $x_{opt.n}$ which, in turn, is less than x_{opt} (at which Y is maximum). Hence it is important to study the optimum density in any crop production in order to obtain a maximum Y_n or Y_e.

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TITLE: "A Statistical Analysis of the Yield of Winter Wheat in Luan Cheng Prefecture in Relation to the Local Climatic Conditions"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 3, Sep 80 pp 161-170

TEXT OF ENGLISH ABSTRACT: The relationship between the yield of winter wheat in Luan Cheng prefecture and the local agro-climatic conditions, including illumination, heat and precipitation, was studied statistically using such methods as Fisher's Regression Integral, Simple and Partial Correlation, Test of Hypothesis and the Multiple Linear Regression by Successive Elimination. Problems concerning the undulation of yields influenced by the variation of climatic conditions, the critical moment and degree of such influences, the cultural practices and managements of the local winter wheat crops, as well as the evaluation of the local agro-climatic resources were also discussed. It was hoped that such discussions would be helpful to the realization of higher and more consistent yields, the rational utilization of climatic resources and schemes of crop rotation.

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As a result of these discussions and analysis, the following conclusions were reached:

1) The illumination and heat conditions of Luan Cheng in general could satisfy the need for growth and yield components of the wheat cultivar. Under the present cultural practices, the probability of an average yield of 500 kilo per mu was more than 70 percent.

2) Among the three factors influencing the yield of winter wheat crops of Luan Cheng, heat was the major one.

3) The total quantity of heat for wheat in Luan Cheng was sufficient, but its distribution during different growth stages was not completely suitable to the physiological requirements of the wheat crop, which could be found in the following three stages:

a. The stage before and during the overwintering period. The values of the regression integral, partial regression coefficient, simple and partial correlation coefficient were all positive, indicating that the yields in years of relatively higher temperatures were higher than those in years of lower temperatures.

b. These values were negative in the period from late February to the middle of May, during the stages of differentiation of spikelets and florets, indicating that the yields in years of lower temperatures were higher than those in years of higher temperatures.

c. These values were positive again in the period from the middle of May to

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early June during the stages from filling to maturity.
4) According to the data and analysis of this study, it was pointed out that there was improper handling in the irrigation practices in Luan Cheng prefecture.
5) The problem of hot and dry winds did exist in the in the latter stage of the wheat plant in Luan Cheng prefecture, but it was of little importance as compared with the mountainous or rolling regions and the unirrigated dry land nearby.

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TITLE: "A Preliminary Study on the Variation of the Date of Heading in Spring Wheat Crosses"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 3, Sep 80 pp 171-178

TEXT OF ENGLISH ABSTRACT: Date of heading was used as an index in the study of the heredity of the earliness of spring wheat. The results indicated that there was a close relationship between hybrid F_1's, F_2's and their respective parents. According to data of five years, the average correlation coefficient between the F_1's and their parents was 0.8655, and that between the F_2's and their parents was 0.8890, i.e., both generations were highly correlated with their parents. The regression coefficient was highly significant, too.

The value of heritability ($h^2\%$) in a broad sense calculated from 41 different crosses in four years was comparatively high, ranging from 44 to 85 percent, with an average of 61.2 percent. It was observed that the larger the difference

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between the date of heading of the two parents of a cross, the higher was the heritability of this cross, and vice versa.

Observations on 324 crosses at five sites in four years indicated that the date of heading of F_1's was complicated and manifold. Of the F_1's of the 324 crosses studied, 53.5 percent were earlier than, or the same as, their early parents; 39.5 percent were intermediate between their early and late parents, whereas only 7 percent were later than, or as late as, their late parents. Thus, with the majority of the crosses, the F_1's were earlier than, or as early as, their early parents, or earlier than the mid-parents, indicating that in the heredity of earliness, dominance is a fundamental tendency.

A continuous variation was observed in the date of heading of individuals in F_2 populations. Crosses inclining toward earliness were more than those inclining toward lateness. A few crosses were of normal distribution. According to an average from 54 crosses, 28.3 percent of the individuals of the F_2 population were earlier than the early parent, whereas only 14 percent were later than the late parent. In crosses with smaller differences in earliness between their two parents, there were more transgressive types and fewer intermediate types in the F_2 population, whereas in crosses with larger differences there were more intermediate types and the number of transgressive types was significantly small.

[Continuation of ZUOWU XUEBAO No 3, Sep 80 pp 171-178]

No significant difference was observed between reciprocal crosses in the date of heading of F_1's or F_2's. The values of heritability calculated were also similar between them respectively. Thus, it was suggested that the heritability of the date of heading of the common wheat seems not to be influenced by the cytoplasm.

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TITLE: "A Preliminary Study on the Genetic Variation of Heading Dates in Rice"

SOURCE: Beijing ZUOWU XUEBAO [ACTA AGRONOMICA SINICA] in Chinese No 3, Sep 80 pp 179-188

TEXT OF ENGLISH ABSTRACT: Observations on genetic variability of dates of heading of F_1 and F_2 generations of 384 single crosses among various ecological types in rice were made during the period of 1975-1978. The results were summarized as follows:

1. The first generation hybrids between different ecological types showed a great variability in their dates of heading. The F_1 crosses between distant ecological types showed outstanding transgression in the date of heading, whereas those between less-distant types expressed no transgression; in the latter case the numbers of the early and late crosses were nearly the same. A dominant effect on the date of heading was not apparent.

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2. The difference between dates of heading of the parents functioned regularly as a controlling factor for the transgressive as well as the non-transgressive earliness in the F_2 generation. The smaller the difference between dates of heading of the parents, the higher was the ratio of transgressive earliness, whereas a larger difference resulted in a lower ratio. This tendency held true for all the different types of crosses. This fact is very important in the choice of parents and making crosses for earliness.

3. The inheritance of the date of heading in rice appeared mainly to be controlled by polygenes; most of the F_2 populations gave more or less unimodal distribution. Some modifications were found in several crosses.

4. The heritability of the date of heading in rice was very high. Both the phenotypic and the genotypic coefficients of variability were small, and the difference between these two values was also small, indicating that the date of heading was mainly controlled by genotypes.

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TITLE: "The Mountain Effects on the Baroclinic Instability of the Long and Ultra-Long Waves in the Atmosphere"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Mar 80 pp 1-15

TEXT OF ENGLISH ABSTRACT: The general rules concerning the mountain effects on the movement and development of the long and ultra-long waves are shown. When a westerly cold trough moves eastward over a mountain, if a_m/a_2, the amplitude ratio of the topographic equivalent vorticity to its wind field vorticity, is relatively small, its amplitude damps in wind field and amplifies in temperature, and its wave speed in a wind field is faster than that in a temperature field. As it crosses the ridge of the mountain, its wind and temperature change inversely.

The physical process of the cyclo-genesis in the lee side is discussed in some detail. In the situation without the mountain, the mean wind field of the

[Continuation of QIXIANG XUEBAO No 1, Mar 80 pp 1-15]

ultra-long waves generally moves westward, but the shear wind and temperature field move generally eastward. This is the reason why the ultra-long wave is not as baroclinically unstable as the long wave. It is deduced theoretically that the ridges of the ultra-long waves favor amplification between two topographic ridges of the same scale, and this deduction is consistent with the geographic distribution of the observed frequency of the blocking ridges.

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TITLE: "An Annulus Experimental Simulation of the Influence of the Qinghai-Tibetan Plateau on the Wind Field over Its Adjacent Regions in Winter"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Mar 80 pp 16-26

TEXT OF ENGLISH ABSTRACT: In this paper the winter circulation over the Tibetan Plateau and its adjacent regions is simulated in a rotating annulus. The main results are as follows:

In winter the formation and intensity of the major trough over eastern Asia is not only related to the Continent-Ocean distribution and the dynamical role of the Plateau, but also to the thermodynamic effect of the Plateau which is also very important. The atmosphere over the Plateau and its adjacent regions is a cold source in winter. The meridional vertical circulation to the south and

[Continuation of QIXIANG XUEBAO No 1, Mar 80 pp 16-26]

north of the Plateau is directly related to the cooling effect over it. In addition, we find that a cooling model plateau may give rise to minor troughs moving eastward on the southern branch current to the south of the Plateau.

By comparing the experimental results of a nonheating and noncooling model plateau, a cooling model plateau and a partly heating model plateau, some dynamic and thermodynamic roles of the Plateau are revealed.

AUTHOR: LIAO Dongxian [1675 3159 6343]
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TITLE: "Some Problems Concerning Initialization and Choice of Parameters in Numerical Weather Prediction"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Mar 80 pp 27-35

TEXT OF ENGLISH ABSTRACT: In this paper the causes of the inconsistencies between the initial data and the prognostic model are discussed. One of the preliminary conclusions reached is that the inconsistencies are, in many cases, primarily caused by the disagreement between the assumptions (or treatments) made in the model and the observations taken as initial values. A scheme for initialization, constrained to total energy conservation and non-divergence of the whole air column, is proposed. Finally, a scheme for the choice of certain parameters, subject to the global integral constraint

$$\int_E \int_0^{p_s} \left(uF_u + vF_v + \frac{dQ}{dt} \right) dA\,dp = 0$$

is suggested.

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TITLE: "A Test of Statistical Forecasting Scheme for Western Pacific Typhoon Tracks Using Numerical Forecasting Results as Predictors"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Mar 80 pp 36-43

TEXT OF ENGLISH ABSTRACT: The multiple linear regression equations derived by the MOS technique were tested for forecasting western Pacific typhoon tracks. Numerically predicted 500 mb geopotential height at 27 grid points to the north of the typhoon and parameters showing the state of the typhoon were selected as predictors. Two kinds of regression equations derived with different predictands were described. In the first kind, the predictands were the displacement of the typhoon at intervals of 12 hours. In the second kind, the predictands were the corrected amount of the displacement error of the typhoon numerically predicted. However there were only 84 statistical samples which might have some influence on the forecasting stability of the scheme.

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TITLE: "The Basic Dynamic Equations and the Main Properties of the Saturated Moist Air"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Mar 80 pp 44-50

TEXT OF ENGLISH ABSTRACT: By use of the so-called generalized temperature of saturated moist air, a characteristic quantity representing the enthalpy of the air and a set of dynamic equations are derived. Based on these, the concept of the moist-balanced wind (or moist geostrophic wind) and that of pseudoequivalent temperature wind (or moist thermal wind) are suggested. Finally, some fundamental behaviors of low-level jet streams are studied.

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TITLE: "The Spectral Measurement of the Solar Direct Radiation"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Mar 80 pp 51-63

TEXT OF ENGLISH ABSTRACT: By means of a thermoelectric Actinometer mounted with eight colored glass filters, the spectral intensities of the solar directed radiation were measured in 10 stations, distributed in 7 different regions of China, for various periods of time during 1975-1978. Based on 2698 series of data obtained from the observations, the effects of the solar elevation, season, geographical latitude and altitude above sea level as well as aerosol and water vapor on the solar spectral radiation are analyzed. The relative fluxes of the solar spectral radiation in various spectral bands are tabulated with air mass, the atmospheric turbidity coefficient and absolute humidity at the surface as three physical parameters.

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TITLE: "Some Research on the Development of Hail Clouds"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Mar 80 pp 64-72

TEXT OF ENGLISH ABSTRACT: This article includes some partial works, including basic research on hail cloud physics and hail suppression conducted by us during the past eight years. This consists of the life history of the hail cloud cell, the combination of cloud and formation of hail cloud, relation between hail cloud and environmental conditions, classification of hail cloud physics, lightning observation and analysis of hail clouds, and some research on hail suppression.

The results of the important research listed above are briefly given in this paper.

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TITLE: "Studies on the Life Histories and Bionomics of Four Species of Green Lacewings"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 1-8

TEXT OF ENGLISH ABSTRACT: In this paper the life histories and the predacious capacities of four species of green lacewings, Chrysopa phyllochroma Wesmael, C. septempunctata Wesmael, C. sinica Tjeder and C. formosa Brauer, are detailed. According to our observation, they have four generations each year in Shandong Province. Because the females have longer longevity and periods of oviposition and the phenomenon is laternate generations is very common, there is the probability that some of them appear over four generations. The green lacewings overwinter in the adult stage of the overwintering type, and the rest of the

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 1-8]

three species overwinter in propupas in cocoons.

All four of these species can prey on cotton aphids and eggs of cotton bollworms, and are important natural enemies of the two cotton insect pests in our province. Among them, C. phyllochroma Wesmael is the dominant species in wheat and cotton fields. Their natural population occurs in great numbers from the middle of June to the beginning of August in cotton fields. This is the proper time for biologically controlling "summer aphids" and the third generation of cotton bollworms.

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TITLE: "A Preliminary Study on the Long-Legged Walnut Weevil, Alcidodes sp."

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 9-16

TEXT OF ENGLISH ABSTRACT: The long-legged walnut weevil, Alcidodes sp., is an important pest and causes serious damage to walnut fruits. Since 1975, biological observations and control tests have been conducted in Pingwu County of Sichuan Province. The results obtained during 1975-1977 are summarized as follows:

1. The completed life cycle of the weevil consists of one generation a year, and overwinters in the adult stage. After hibernation, the weevil becomes active in April and begins to injure the walnut fruits, buds, young shoots and petioles. Mating and oviposition take place in May, and the oviposition period is quite long, usually lasting until mid-August. Eggs are laid in fruits, usually a single egg in each fruit. After the end of the oviposition period,

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 9-16]

the overwintered adults die away in October. The first appearance of new adults is in mid-June. Hibernation takes place in November.

2. The weevil is a weak flier, and has a "death-feigning habit," heliotropism and protective coloration.

3. Control measures were tested effectively with a spray of spore suspension (2-5 x 10^8/ml) of Beauveria bassiana, or 50 percent trithion, or 50 percent sumithion, or 82 percent phosphamiden, the three insecticides being applied at a dilution of 1:1000. The proper time for control is suggested at the peak of the appearance of the overwintered weevil, or of the egg-hatching period.

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TITLE: "A Preliminary Study of the Bionomics of Citrus Red Mite, Panonychus citri McGregor"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 17-26

TEXT OF ENGLISH ABSTRACT: Panonychus citri McGregor is an important citrus pest of Sichuan. The mites usually begin to feed in early March. Their injury is most serious from mid-March to April. Several peaks of population often appear in spring and autumn. The first peak of population in spring occurs mainly under the following conditions:
The initial population of hibernating mites is higher;
The temperature in March-April is higher than usual, the highest temperature being 25°C on an average every week;
The sunlight and relative humidity are appropriate;
The natural enemies are lower in population;

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 17-26]

The growth of the mites fits in with the elongating stage of the citrus top.

The comprehensive influences of the ecological factors should be analyzed in the prediction of mites so that this pest can be controlled in time before the occurrence of the first peak of population in the spring.

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TITLE: "Studies on the White Rot (Coniothyrium diplodiella (Speg.) Sacc.) of Grapevines"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 27-34

TEXT OF ENGLISH ABSTRACT: Wounds and sufficient moisture are the essential conditions for the infection of white rot in vineyards. Infections will take place through injuries on any green portions of the vine. Under the environment of high humidity or in the guttation of leaves, water pores may become a path of infection. On clusters it is not necessary for wounds to be visible to the naked eye since natural wounds on pedicels are sufficient for the invasions.

Spore germination and invasion of white rot are closely bound up with moisture. A sufficient soil moisture due to rain or irrigation may play a role in

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 27-34]

promoting infection in two ways: (1) Condensation of water film induces the exomosis of nutrients, which stimulate spore germination and further invasion. (2) Due to the increasing of root pressure of the vine, the guttation of leaves is induced which gives a lift to the disease by affording it water, nutrients and a path for invasion.

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TITLE: "On the Biology of the Perfect Stage of Fusarium graminearum Schw."

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 35-42

TEXT OF ENGLISH ABSTRACT: Experimental results indicate that the temperature range for perithecial formation G. zeae ranges from 5-35°C, and for ascospore production ranges from 13 to 33°C, with an optimum at 25-28°C.

A proper moisture of the substrate is needed for ascospore formation and a diffused light is favorable for perithecial formation, especially at the initial stage of culture. When the culture starts in the dark, the perithecial production is retarded even if the culture is exposed to full light at the later stage of its development. Asci and ascospores, however, can be formed in the dark.

The ascospore discharge is to be controlled by moisture and precipitation. The number of ascospores released is greater at night (8 pm - 8 am) than in the day (8 am - 8 pm) and greater on rainy days than on clear days. The peak of

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 35-42]

spore discharge is from 10 pm to 8 am daily, and particularly from midnight to 6 am. Germination of ascospores occurs at 4-35°C, with an optimum at 25-28°C. The germination may amount to more than 90 percent within 4-8 hours at a temperature of 25-30°C. The ascospore can also germinate without free water, but the germination is markedly inhibited when the relative humidity is up to 81 percent, and it never occurs at less than 81 percent. Light and additional nutrition are unnecessary for ascospore germination.

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TITLE: "On the Rice Varietal Resistance of Xanthomonas oryzae in Guangdong"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 43-48

TEXT OF ENGLISH ABSTRACT: Sixty isolates of different virulence were inoculated on 46 selected rice varieties with varying degrees of disease reaction. Results showed that the varietal resistance of rice to the leaf blight bacteria may generally be grouped into three categories, namely (1) broad spectrum, (2) non-broad spectrum, and (3) no resistance. Most of the foreign introduced cultivars or hybrids belong to the first group. They were moderately resistant or moderately susceptible. The varieties "Zhai-Ye-Qing No 8," "Foo-Bao-Ai No 22," "Zao-Jin-Fung No 5," "Qiu-Er-Ai," "Teng-Pu-Ai," "Tetep" and "Zenith" belong to

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 43-48]

the second group, while the high-yield varieties, such as "IR8," "Zhen-Zhu-Ai," "Quang-Liu-Ai No 4" and "Jing-Gong No 30" belong to the third group. To improve the breeding program for bacterial leaf blight resistance, the promised results will be obtained by using broad spectrum resistant varieties for source of resistance and strongly virulent strains of the leaf blight bacteria for resistance tests.

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TITLE: "Studies on the Techniques of Vacuum Fumigation with Methyl Bromide or Ethylene Oxide to Control Stored Product Pests and Plant or Animal Diseases"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 49-57

TEXT OF ENGLISH ABSTRACT: This paper deals with the measures of vacuum fumigation with methyl bromide or ethylene oxide to control stored product pests for plant seeds or animal diseases. In 1976-1979, a PCV-1000 procedure control vacuum fumigator was manufactured. It consisted of a 1 m^3 circular steel chamber with equipment including pumping, heating and fumigant vaporizing, an operating case and the decomposition arrangement of the fumigant vapor (methyl bromide and ethylene oxide).

The test results indicated that the two-three hour fumigation with methyl bromide

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 49-57]

at a dose of 75-90 g per m^3 and the three hour fumigation with ethylene oxide at a dose of 90-120 g per m^3 which were at a pressure of 2-3 cm Hg absolute, were effective in controlling the insect samples wrapped in various ways, such as the larvae of the khapra beetle (Trogoderma granarium Verts, Trogoderma persicum Pic.), the adults of the rice bore beetle (Rhizopertha domica (F.)), red flour beetles (Tribolium castaneum (Hbst.)) and rusty grain beetles (Cryptolestes ferrugineus (Step.)), the rice weevils of all stages (Stophilus oryzae (L.)) and Chinese weevils (Callosobruchus chinensis (L.)), etc. The five hour fumigation with ethylene oxide at a dose of 500 g per m^3 and the 12 hour fumigation at a dose of 300 g per m^3, which were at a pressure of 2 cm Hg absolute, were effective in destroying the animal "Anthrax" germs. The five hour fumigation with the mixture of ethylene oxide at a dose of 40 g per m^3 and methyl bromide at a dose of 160 g per m^3 at a pressure of 2 cm Hg absolute was effective in controlling the germs of Fusarium wilt of cotton (Fusarium oxysporium (ATK)).

Afterwards, the residual fumigant was pumped out from the chamber and air-washings were twice carried out. The chamber was then opened. The atmosphere in the case was tested to ensure that methyl bromide or ethylene oxide residual quantities did not far exceed the maximum allowable concentration.

[Continuation of ZHIWU BAOHU XUEBAO No 1, Mar 80 pp 49-57]

The 5 percent NaOH alcohol solution used to decompose methyl bromide could produce a 96 percent effect, while water used to decompose ethylene oxide could produce 97-98 percent effect.

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TITLE: "Studies on the Methyl Bromide and Ethylene Oxide Decomposition Effects"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 58-65

TEXT OF ENGLISH ABSTRACT: This paper deals with the decomposition of methyl bromide with heating or salt alcohol solution, and that of ethylene oxide with water. The test results indicate that 5% NaOH alcohol solution used to decompose methyl bromide can produce 96 percent effects. When the temperature is over 700°C, methyl bromide may be decomposed to 99-100 percent. Water used to decompose ethylene oxide can produce 97-98 percent effects.

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I. GENERAL INFORMATION

EXPERIENCE ACHIEVED IN AGRICULTURAL ZONING

Beijing RENMIN RIBAO in Chinese 15 Aug 80 p 2

[Article: Scientific Data Provided for Readjustment of Composition of Agriculture and Patterns of Production; Jiangsu, Sichuan, Heilongjiang, Heibei, and Shanxi Provinces Accumulate New Experiences in Agricultural Zoning"]

[Text] During the year between the State Council's convening last April of the first All-China Natural Agricultural Resources Investigation and Agricultural Zoning Work Conference and the convening in April this year of the second such conference, departments concerned have organized personnel from many disciplines and from all quarters for coordinated combat, under the leadership of party committees and government at all echelons. They have done a great amount of work and have accumulated no small number of new experiences in natural agricultural resource investigation and agricultural zoning work. Because of the different circumstances in some provinces and regions, there has been a difference in emphasis and characteristics in the ways things have been done.

Clear guidance of thought and improvement in leadership methods. As early as 1963, Jiangsu Province made a rather systematic investigation and study of agricultural zoning, and it has used the results of this work for the past several years to promote the steady development of agricultural production. During the past year or so, further emphasis has been given to pragmatism, to grasping the central points, and to overall analysis in order to provide scientific data for the formulation of long-range planning and for the guidance of current agricultural production, so that zoning work will achieve new breakthroughs. The method of leadership adheres to combining "zoning, planning, and models" (by which is meant: first, zoning agriculture; then, developing a plan for agriculture; and finally, setting up a model based on a summary of experiences with different typical cases, and conducting scientific experiments and demonstrations, with the successful ones being promoted), in a conscientious application of the "five grasps": 1) grasp cooperation to make fullest use of the function of research units, institutions of higher education, and departments concerned; 2) grasp the central points, which in the survey of agricultural resources means soil resources primarily, and with provincial-level overall zoning being the focus of agricultural zoning during the first half of the year, and second-echelon zoning throughout the province being the focus of zoning during the second half of the year; 3) grasping test sites to do a good job with models, to gain experience, and to gradually push forward; 4) grasp giving play to academic democracy, with adherence to seeking truth from facts; and 5) grasp the application of results, promptly putting them into service for planning and guidance of production.

Combining of the coarse and the fine; the long term and the short term. Sichuan Province's survey of agricultural resources and agricultural zoning work began with a formulation of production plans and guidance for current agricultural production, and it was done by combining the coarse and the fine, combining the long term and the short term, and combining specialized units with cadres and the masses. The actual methods used were as follows: 1. Posing 39 problems on the basis of the main points of the provincewide agricultural resources survey and the agricultural zoning study plan, with tasks being assigned to 64 scientific units, institutions of higher education, and industrial departments and bureaus, while starting up county-level zoning test sites at the same time in Guanghan and Yanyuan counties. 2. Combining a group of scientific and technical personnel led by specialists with prefectural and county forces to undertake a survey of resources and agricultural zoning work in which a general survey of soils was the focus. This was done in 17 counties of Yibin Prefecture. 3. In 20 counties, including Dayi, Wuling, and Hechuan, the counties relied on their own forces to undertake rough agricultural zoning work. Looked at in terms of the results of a year's experience, all three of these methods have desirable qualities, and a selection from among them has to be made on the basis of realities so as to proceed from the coarse to the fine in an orderly way to the gradual launching of zoning work.

Devotion of efforts for comprehensive inspection and comprehensive zoning of key areas. The object of Heilongjiang Province's emphasis on zoning was a combination of practicality, stressing major points, and the short and the long term, in order to serve the building of agricultural bases emphasizing commodity grain, in order to serve the acceleration of agricultural development, and in order to serve the realization of the modernization of agriculture. The better this problem is solved, the more it is possible to gain the support of leaders and get a good reception by the masses; it will then be possible to turn the science of agricultural zoning into productivity. Ever since last year, Heilongjiang Province has organized 200 specialists and technicians to make a comprehensive inspection of the Sanjiang Plain, to conduct an across-the-board analysis and comprehensive evaluation of the water, soil, and climate resources there, and to study the factors favoring development of agriculture, forestry, and livestock in the Sanjiang Plain, as well as the problems in setting up a rational economic structure. The province has proposed using comprehensive zoning of the Sanjiang Planin and 19-point special investigative report in order better to use special advantages, to build agricultural bases, and to provide scientific data and scientific recommendations.

Serious attention to technical training: impetus to the launching of zoning work. In undertaking an investigation of agricultural resources and agricultural zoning work during the past year and more, Hebei Province has devoted attention to the training of cadres and technical mainstays at the prefecture, county, and commune levels, first in the two test site counties of Luancheng and Zunhua, and later by using the two test site counties to expand to 15 other counties. Those taking the training included leading cadres in prefectures and counties, principal officers-in-charge at vocational departments and communes, and vocational and technical mainstay cadres at all levels. As of now, a total of more than 9,000 people have been trained throughout the province, and more than 400 technical mainstay cadres who are able to work independently have been trained. Almost 1,000 technicians fairly familiar with vocational work and more than 1,000 farmer technicians have been trained. Through the operation of training classes, a specialized corps with a clear understanding and vocational expertise has been formed. Under the unified leadership of

the local government, a combination of leaders, technicians, and masses are able not only to complete investigative and zoning work through reliance on local forces, but to put to better use the results of zoning, with benefits both for solving real problems in current production and for building long-term production.

Adoption of new technology and acceleration of progress into the investigation of natural resources. Since last year, Shanxi Province has been conducting comprehensive zoning test site work in eight counties, including Taigu and Ji. They have also devoted attention to comprehensive rough zoning work for each specialized trade for the province as a whole, and at the county level. By way of hastening the progress and improving the accuracy of the survey of natural resources, Shanxi Province has organized new technical applications and experimental research work for the agricultural resources survey. First, they have paid attention to aerial surveys. As the result of supplemental surveys made last year and this year, all counties throughout the province are able to provide specialized trades with large-scale aerial photographs from the resources survey. Second, remote sensing experiments were applied in the survey of agricultural resources. From the interpretation of 1:250,000 satellite photographs, they compiled maps showing current land use throughout the province and geomorphological maps to provide data for provincial-level rough zoning. They also conducted aerial remote sensing experiments in Qi and Wenshui counties, using interpretation of 1:20,000 infrared photographs and multi-spectral scanner imagery to make maps--thereby providing scientific data to county-level agricultural zoning. In the survey of underground water, soil, and land resources throughout the county, preliminary experimental use was made of new satellite photograph and aerial photograph technologies in order to improve the accuracy and speed of the work.

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JOINT OPERATION OF STATE FARMS AND COMMUNES BENEFICIAL

Beijing RENMIN RIBAO in Chinese 9 Jul 80 p 2

[Article by correspondent Kong Qingzhi [1313 1987 0037]: "State Farms in Various Places Adopt Various Forms of Joint Enterprises With Communes and Brigades To Enliven the Economy of the Farms and Develop Commune and Brigade Production"]

[Text] Joint agricultural, industrial, and commercial enterprises in the agricultural reclamation system in various places have entered into joint business operations of various kinds with communes and brigades in rural villages. These joint ventures have shown very good economic benefits, both in developing the production of state farms and in helping rural village communes and brigades along the way to prosperity. This way of doing things has been universally welcomed by the farmers.

Joint business ventures between the agricultural reclamation system and the communes and brigades have for the most part taken the following several forms at the present time:

1. Joint commune and brigade enterprises for processing and marketing of goods with return of profits. Yukang County in Zhejiang Province was one instance in which this method was instituted. After the commune and production brigades had completed the state plan, excess products were turned over to nearby joint state farm industrial and commercial enterprises for processing and marketing, with the profits being divided.

2. Signing of economic contracts with production teams, whereby the joint enterprises provide superior varieties and technology to production teams, and the production teams provide products to the joint enterprises. An example is the Joint Agricultural, Industrial, and Commercial Enterprise Milk Powder Plant in Xin County, Shanxi Province. This plant's processing capacity could not be satisfied by the local output of fresh milk. Because of soil and feed limitations, the enterprise was unable to increase the size of its dairy cow herds. Meanwhile, natural conditions in surrounding production teams were good, and they wanted to grow but lacked the necessary capital. The joint enterprise thereupon helped six nearby brigades to operate individual dairy farms, provided technical guidance, and helped train personnel in the feeding of the livestock, in return for which the production teams provided fresh milk to the joint enterprise. Little by little, the joint enterprise recovered the cost of the dairy cows by paying a reduced price for the milk, and by the end of the year, it was able to return some profit to the production team. Both parties made a profit and were very satisfied.

3. Partnership operations with division of profits. The Ba County branch company of the Chongqing Joint Agricultural, Industrial, and Commercial Enterprise, which was already involved in a farm-brigade joint enterprise, last year undertook further specialized operations with more than 300 citrus fruit production teams and orchards throughout the county. They merged the county citrus fruit purchasing station into a joint enterprise to establish a citrus fruit directorate for unified dealings in the production, processing and marketing of citrus fruit throughout the county. Production teams entered a partnership either by providing goods or by paying cash, and profits from the enterprise were paid as dividends on the basis of the number of shares held. This cemented the relationship between the joint enterprise and the production teams more closely than a contract, would have, and it served to advance agriculture toward specialization and socialized production.

4. Joint farm and commune operation of joint enterprises. The Tuanshi Joint Agricultural, Industrial and Commercial Enterprise in Zhejiang Province was jointly formed by the Tuanshi Agricultural Reclamation Farm and 55 production brigades in four nearby communes, with no change in ownership. They jointly operated processing industries and a business for the sale of their own products. After 2 months of test operations last year, economic results were remarkable.

There are numerous advantages in economic union between state farms and communes and brigades. They can, for one thing, make full use of technical capabilities, facilities, and equipment and relatively plentiful capital to develop the farm's economy and increase the income of communes and brigades, thereby accelerating the accumulation of capital for the modernization of agriculture. Preliminary calculations following this year's establishment of a countywide joint citrus fruit operation at the initiative of the Ba County branch company in Chongqing, Sichuan Province, shows that the farmers' [illegible] increased by 500,000 yuan. Farmer participation in processing and at each link in marketing helped enliven the economy of rural villages, promoted the development of a commodity economy, and took advantage of the labor potential in rural villages. It helped transform the small rural economy situation of "small but complete" into the development of specialized and socialized agriculture. It was also helpful in cementing relations between the farms and communes and in solidifying the socialist collective economy in rural villages.

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BRIEFS

CHANGJIANG WATER LEVEL RECEDES--Water levels along the entire length of Changjiang have receded to below the warning levels as the flood water emptied itself into the East China Sea. Thus, the people along the river have won their 2-month-long struggle against the most severe flooding in 25 years. Recent torrential rain and flooding caused heavy inundation in some areas along the river. With the help of new pumping stations equipped with huge electric pumps, the inundated area was reduced to only several million mu. In Hubei alone, 15 billion cubic meters of water were drained from the inundated areas between June and August. [Beijing RENMIN RIBAO in Chinese 28 Sep 80 p 1]

FARM MACHINERY MINISTRY GROUP--The Ministry of Farm Machinery recently decided to organize work groups to help the three northeastern provinces--Heilongjiang, Liaoning and Jilin--solve problems in developing farm mechanization under the leadership of the Provincial CCP Committees and Governments. A work group arrived in Changchun 9 October. Provincial Deputy Governor Wang Jiping and leading persons of the provincial farm machinery bureau talked with the group and mapped out tasks and work methods. [SK190104 Changchun Jilin Provincial Service in Mandarin 2200 GMT 10 Oct 80]

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BRIEFS

WATER CONSERVANCY--The Nushan Lake water conservancy project in East Anhui has been completed in June this year after 2 years of hard work in construction. The project is aimed at expanding the area under irrigation by 350,000 mu and improving irrigation for 679,000 mu of farmland. With a water storage capacity of 280 million cubic meters, it had played an important role in draining water from torrential rains in nearby Jiashan County from early June to late July this year, thus saving 50,000 mu of good farmland and the lives of 20,000 people. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 9 Oct 80 OW]

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TWO NEW STRAINS OF SUGARCANE BRED IN FUJIAN

Beijing RENMIN RIBAO in Chinese 5 Jul 80 p 2

[Article by Xinhuashe correspondent Lin Junqing [2651 0193 0615]: "Fujian Breeds Two Superior Varieties of Sugarcane"]

[Text] The Sugarcane and Hemp Institute of the Fujian Provincial Agricultural Academy has bred two superior varieties of surgarcane, "Minxuan 703," and "Mintang 70/611," each of which has earned the Fugian Science Congress' accomplsihment award and the Ministry of Agriculture's 1979 award first class for technological improvements in agriculture and livestock raising.

The characteristic these two varieties share is high sugar content. As compared with the "Taitang 134" sugarcane, which is currently grown throughout Fujian Province, for every 100 jin of sugarcane, "Minxuan 703" produces an average of 1.18 jin more sugar. "Mintang 70/611" averages 6.6 liang greater output of sugar.

Another characteristic is high and consistent yields. "Minxuan 703" has 70 percent higher yields per mu than "Taitang 134." "Mintang 70/611" has from 10 to 15 percent higher yields per mu than "Taitang 134."

It takes about 10 years to produce superior variety sugarcane from breeding to popularization of its cultivation. In the case of "Minxuan 703, however, 9 years were required to extend its cultivation over 100,000 mu. In the case of "Mintang 70/611," it began with five seeds in 1970, which were selectively bred, and last year this variety was popularized for cultivation over 20,000 mu. This was the result of the intensive research and arduous toil of comrades in the breeding laboratory in coordination with reliance on the masses and the laboratories of the institute. Each year they must select for evaluation superior plants from among more than 40,000 plants growing on 10 mu of land, and they have set up 24 local test sites throughout the sugarcane producing regions of the province.

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REFORM OF PLANTING SYSTEM TO CORRESPOND TO NATURAL CONDITIONS

Guangzhou GUANGDONG NONGYE KEXUE [GUANGDONG AGRICULTURAL SCIENCES] in Chinese No 1, 8 Jan 80 pp 14-17

[Article by Yuan Zhiqing [5913 1807 3237] of the Guangdong Provincial Academy of Agricultural Sciences]

[Text] The planting system is a fundamental system of agricultural production. It determines the number of crops, the proportion of planting of crops, the varieties used and the techniques of cultivation. It determines agricultural resources, production materials, the degree of utilization of material techniques and labor force. It determines the mutual relationship between crops and soil, the rise and fall of the fertility of the soil, and the continuation of stable and high yields. A rational planting system can continuously elevate the unit yield and total yield of agricultural crops, and it can also combine the utilization of land and nurturing of the land, gradually elevate the soil's fertility, realize high yields and stable yields, and it is a low cost and complete system of agricultural techniques. Changing an irrational planting system to a rational planting system is a strategic measure to promote increased agricultural production. Reforming the planting system is reforming those planting systems that cannot fully utilize natural conditions and that cannot adapt to the conditions of production so that the planting system that can adapt to the conditions of production can be developed.

I. The Planting System Is the Product of Historical Development

A rational planting system is always adapted to definite socioeconomic conditions and levels of scientific technology under specific natural conditions. After Liberation our province's planting system in rice fields underwent three vast reforms. The first reform was to change single season rice to double season rice and to change growing of straw to overturning the soil and tilling. These were mainly carried out during the 1950's. This reform was adapted to the socioeconomic conditions and productive conditions that emerged after the movement of mutual cooperation and the movement to build water conservancy projects in a big way. The reform was successful. The second big reform was to change double season planting of rice and winter drying and winter fallow land to double season planting of rice and winter planting of green manure. This reform was mainly implemented during the 1960's. At the time, the three-level ownership system and the people's communes were firmly established and developed. The farmer's

enthusiasm in production was riding high, the science and technology levels were high, and the superior short stemmed paddy rice variety that was tolerant of fertilizers was bred. After water conservancy problems were solved, "harvesting more or harvesting less depended upon fertilizers," and fertilizers became the major conflict regarding the use of land. This reform corresponded exactly to the solution of this major conflict and thus remarkable results were achieved, and food grain production jumped to a new height. During the 1970's, the third major reform was launched. The planting system centered around two croppings a year was changed to a planting system centered around triple cropping a year. Because of the many years of basic farmland construction, the water, soil and fertility conditions were improved. The amount of chemical fertilizers, farm chemicals and agricultural machinery all increased. The varieties and the techniques of cultivation were elevated. This major reform was launched upon this basis.

II. An Evaluation of the Adaptability of the Triple Cropping System

Our province developed the wheat-rice-rice, rice-rice-rice, rice-rice-late autumn potato cropping systems during the 1970's and at the same time actively studied and popularized the multiple triple cropping system of rotation, interplanting and companion planting of food crops and economic crops. The entire province's multiple planting index rose from 210 percent in 1971 to 229 percent in 1978. Practice proves that all reformed systems that are compatible with natural patterns and economic patterns will produce good results, and conversely they will produce bad results. Generally speaking, the triple cropping system is effective in increasing the yields of food crops and economic crops. The wheat-rice-rice triple cropping system has been implemented on 5.59 million mu each year on an average between 1972 and 1978. The total yield of wheat each year averaged 654 million jin. During the same period, the entire province's total yield of food grains increased by 678 million jin. Of this, wheat production increased 428 million jin, constituting 63.1 percent of the total increase in food grain production. It can be seen that multiple planting and one cropping of wheat has performed a very important function in increasing food grain production. The entire province popularized the rice-rice-late autumn potato triple cropping system over about 600,000 mu and in general an increased production of 20 percent to 30 percent was realized over the old system (winter-potato-rice-rice). Because of the implementation of rotation, interplanting and companion planting of food grains and economic crops, the area of planting of several major economic crops was expanded and the total yield was increased. A comparison of 1978 and 1971 shows that the entire province's peanut production increased 29.3 percent, the total production of jute increased 124.5 percent, the total yield of sugarcane increased 46.2 percent. When many counties and communes implemented mainly the double cropping system of food grains, the yield did not increase for many years. After implementing the triple cropping system, some food grains and economic crops realized breakthroughs in annual per mu yield and total yield.

The adaptability of various triple cropping systems in different types of agricultural and economic regions is different. Wheat-rice-rice triple cropping system was more adaptive to high yielding regions where there were more people

and less farmland such as the Chaoshan Plain and the Pearl River Delta's fenced farmland areas. The system was more adaptive to the locality's natural, economic and productive conditions and scientific and technological levels and it produced greater results in increasing production. In this type of region, the average land per person is only 3/10s to 6/10s of cultivated land. The soil of the farmland is fertile, water conservancy is good, there are plenty of organic fertilizers and chemical fertilizers, labor is sufficient, techniques of cultivation is at a high level, the average per mu yield of each crop of paddy rice has already reached the level surpassing the guidelines. To continue to raise the unit yield of paddy rice is most difficult but multiple planting and one cropping of wheat can more easily produce a greater increase in total yield of food grains. Chaoan County planted wheat-rice-rice over an area constituting 28 to 53 percent of the total area of rice fields each year from 1971 to 1978. High yields of wheat and increased yields of rice and wheat of every crop, increased yields for the entire year, and continued increases in yield were realized. In 1978, the county planted 188,000 mu of wheat, average per mu yield was 252 jin, and there were 36 production teams that had an average per mu yield of over 500 jin. Wheat production constituted 8 percent of the total yield of food grains of the entire county. For the past 7 years, the unit yield of the triple crops of wheat, early rice and late rice in the county continued to rise. Because the fertilizers and supplements applied were greater than the exhaustion of fertility of the soil, and with the addition of the implementation of rotational cropping and improvement of the soil, the fertility of the soil rose. For example, the annual per mu yield of food grains of the Huang Cuo Wei Brigade surpassed "the guidelines threefold" continuously for many years. The content of organic matter in the soil remained at 2.5 to 3 percent and persistently high and stable yields were realized. In regions of medium yields where the soil's fertility is medium, water conservancy in farmland is poor, fertilizers are deficient, the techniques of cultivation are mediocre, but where the conditions for converting the rice-rice-green manure double cropping system as the major cropping system to the wheat-rice-rice triple cropping system as the main cropping system are not yet complete, the results are not ideal enough. But in counties and communes where there are more people and less farmland, the triple cropping system used as an auxiliary planting system is beneficial to increasing the total yield of food grains and also helps tide over spring infertility. Although it is not beneficial to combining utilization and nurturing of land, it can temporarily ease the shortage in the demand for food grains and the necessity of planting. Hua Xian has over a period of 8 years from 1971 to 1978 produced increased yields of wheat which has constituted a relatively large percentage in the total amount of increased yield of food grains, reaching above 20 percent. The proportion of farmland in medium yield regions for implementing the triple cropping system of wheat-rice-rice cannot be too large. If so, the system will not be compatible with the production conditions. There will be more problems. They are manifested by a drop in the unit yield of wheat, a lag in fertilizers, season and management, increased yields in every crop cannot be guaranteed, and often the situation in which wheat is gained but rice is lost will be created, or early rice will be gained but late rice will be lost, fertility of the soil will drop in general, and increased yields cannot be maintained. In some communes and brigades located in the medium yield hilly regions of Nanhai County, where the area of planting of wheat-rice-rice system surpasses 30 percent of the total area of

rice fields, the potential for producing increased yields by double season rice will be limited. Harvesting more wheat causes a reduced harvest of rice and the total yield of food grains for the entire year lingers without advancing. In our province's low yield regions where there are fewer people and more land, the soil is infertile, labor is insufficient, fertilizers are few, techniques are poor, and the conditions are not suited for implementing the wheat-rice-rice triple system, which frequently causes the land to become infertile after planting wheat, and the yield drops, creating a vicious cycle.

The triple cropping system of rice-rice-late autumn potato is very suitable to the natural, economic and productive conditions of some of the regions of Hainan and Zhanjiang. It can promote the favorable conditions and avoid the damages. It can fully utilize superiority of the seasons. Changing winter potato to late autumn potato solved the conflict between early planting of winter potato and late harvesting of late rice and the conflict between late harvesting of winter potato and early transplanting of early rice. The potatoes had a longer growth season and temperature conditions were more suitable for expansion of the potato pieces, therefore unit yield was raised to a large extent. Early planting of early rice in the Zhanjiang area can avoid "floods" and damage by second generation paddy rice borers. Planting of intermediate rice in Hainan produces a higher and more stable yield than planting late rice because it can better avoid damage by typhoons, torrential rain and internal waterlogging. This type of triple system can also realize a combination of utilization and nurturing of land to a definite degree. Planting potatoes after rice can thicken the loose tillering layer. Because of the additional application of organic fertilizers when planting potatoes and the return of 1,000 and 2,000 jin of potato seedlings to the fields per mu, the soil's fertility can be maintained or raised.

During the mid-1970's, our province began to popularize the triple cropping system of rice-rice-rice. It once covered 700,000 mu. But this triple cropping system requires relatively high productive conditions, the soil of the fields must be fertile, water conservancy must be of a high standard, there must be sufficient organic fertilizers, chemical fertilizers, farm chemicals, nylon sheets, labor and machinery, but at present the economic situation of a majority of our province's communes and brigades cannot satisfy these conditions. Thus the triple cropping system of rice-rice-rice was implemented for only 1 to 2 years and lagged behind. Now, only over 1,000 mu throughout the entire province is still being planted under this system. There are also other important reasons why this type of triple cropping system is not easily implemented: One is that the system is not immune from disasters. Because of the additional planting of one crop of intermediate rice, early rice has to be planted even earlier during the season, and late rice has to be planted later in the season. At these times, damage by "return to cold in spring" and "winter dew wind" occurs. The second is damage by insects and diseases. Intermediate rice becomes the "bridging fields" for the growth and propagation of diseases and insect pests which damage late rice. The third is high cost and reduced income.

In the combination of food grain crops and economic crops in the triple cropping system, wheat-peanuts-rice (or wheat-rice-peanuts) triple cropping and peanuts-rice potato triple cropping are more adaptable in medium yield regions. This

makes food grains outstanding and develops oil. Rotation of graminaceous crops and bean crops combines utilization and nurturing of land and benefits banking of fertilizers and fertility of the land, thus maintaining increased yields. If the seasons can be separated, such a triple cropping system can rationally utilize labor, animal labor and machinery labor. It can provide fine feed and green feed, promote the development of animal husbandry. It can earn a lot of income, its cost is low, and its economic benefits are great. Dongwan County has planted wheat-peanuts-rice over large areas during the recent year in the medium yield hilly regions and harvested an additional crop of peanuts, and the total yield of paddy rice increased. In the high yielding enclosed fields in water regions, the total yield of peanuts increased greatly, although the total yield of early rice reduced, peanuts left in the ground, their seedlings and bran solved the deficiency of base manure and stimulated an increase in yield of late rice. Because there was oil and bran, the economy of the communes and the brigades became more active. The triple cropping systems of rice (companion crop)-jute-rice and peanuts (companion crop)-jute-rice have a wider adaptability and they can solve the conflict of competing for land among paddy rice, peanuts and jute. An extra harvest of jute was realized and the soil was improved. These systems were developed in Fuoshan, Huiyang, Zhaoqing, Zhanjiang and Shantou areas and the economic benefits were good.

But, during the 1970's, our province's reform of the planting system also contained many problems. The main problems were these: Some places have done everything "in one shot" and have neglected suiting measures to local circumstances. The land has been used to much while the land was nurtured scarcely. The soil's fertility decreased gradually and as a result, increased production could not be maintained. There was overemphasis on planting of food grains and the overall development of economic crops and animal husbandry was not sufficiently promoted. When deciding on the planting system, unilateral emphasis was placed on the study of singular factors of the utilization of light and temperature and techniques of cultivation while comprehensive analysis of social, economic and productive conditions was lacking. For many years, even though much effort has been spent on planting food grains, growth has still been relatively slow. The area of food grain crops was too large, the proportion of crops that nurtured the land was too small, food grain production could not be continually increased, and the development of economic crops was also limited, thus income was low, and rations were few. The entire province's total food grain production in 1978 registered only a 3.4 percent increase over that of 1971. Although economic crops developed somewhat, our province's unique natural resources were not fully utilized. The speed of development and the level of yields of some economic crops both lagged behind advanced provinces. In 1978, each commune member received an average of only 77.41 yuan from the collective throughout the entire province and 460.8 jin of rationed grains, an increase of only 1.63 yuan over 1971 and the rationed grains were even less by 10.2 jin.

These problems reflect the fact that our province's reform of the planting system has not completely been adapted to natural conditions, conditions of production and objective economic patterns.

III. The Direction of Reform of the Planting System for Future Years in Our Province

Our province has sufficient temperatures, light and rain. These provide extremely favorable conditions for the development of multiple cropping systems, and planting of many different types of crops. But the threat of disease, insects and wind (typhoons, cold dew winds, winds of 5 April) is great. These present difficulties for the planning of multiple crops. The outstanding problem in the productive economy is too many people and a scarcity of cultivated land. The soil's fertility is rather low; low yielding farmland constitutes over half of the total area of rice fields. The foundations of organic fertilizers and green manure are relatively weak. The amount of chemical fertilizers is not plentiful. Therefore fertilizers are the major cause of the slow increase in agricultural production in the present stage. Thus, reform of the planting system should be based on increasing fertilizers and improving the soil and cultivating fertility of the land. The true nature of agricultural production is the utilization of solar energy to produce products, but full utilization of light is closely related to the full utilization of land. To fully utilize land, there must be active nurturing of land. Fertile land is the foundation for crops to grow prosperously and to fully utilize solar energy. With this foundation, agricultural production will be able to increase on an overall basis and continuously, and increased production of food grains can be realized and at the same time a greater development of economic crops and animal husbandry can be stimulated.

According to the policy of "taking food grain as the key link, overall development, suiting measures to local circumstances, appropriate centralization," our province's planting system should be appropriately adjusted. The relationship among food grain crops, economic crops and animal husbandry, the relationship among raising unit yield, expanding the multiple planting index and increasing the total yield, the relationship between utilization and nurturing of land, the relationship among fine tilling and fine planting, the labor force, machinery, and planting in the proper seasons, and the relationship between increasing yield and increasing harvest must be correctly handled well. In future years, the direction of reform of our province's planting system should be to readjust the past emphasis on the planting system of triple cropping of food grains to a plan of proportional coordination between food grain crops and economic crops. The crop structure that uses too much land should be readjusted to a combination of using and nurturing the land and a structure of nurturing the land while the land is being used. The proportion of the triple cropping system of food grains should be appropriately reduced, and the proportion of triple cropping system or the double cropping system of food grain and oil, food grain and sugarcane, food grain and jute, and food grain and green manure crop should be expanded. Practice during the 1970's has proven that there are outstanding conflicts when the area of triple cropping of food grains is too large and shortcomings outnumber advantages: One is that the cropping system was not compatible with the conditions of production and management of techniques. The second was that too much land was being used. Few efforts were made to nurture the land, and the system was not compatible with the nature of the soil. The tilling layer became shallow, the plow pan layer became thick, the soil became stiff, aeration became poor, the release of nutrients became slow,

the intake of chemical fertilizers increased, fertility dropped, and unit yield and total yield both could not be increased. The third is continuous cropping for many years, diseases and insects occurred and spread. It was difficult to raise the yield. The fourth was the creation of tight planting seasons which hindered a coordinated development of triple cropping. The first crop limits the second crop and it was difficult to realize increased yields for every crop and total annual yield. Food grain crops also limited the economic crops and overall development of production was affected. The fifth was lesser economic returns. The collective rations of the commune members remained at a low level for a long time. Therefore the multiple index of food grain crops was too large and the results rendered an opposite effect. Even when the yield of food grains increased within a short period, but throughout the entire year, food grain production was still unable to break through the lingering and stagnant situation. Therefore, in future years, except for certain high yielding regions where there are more people and less land, where food grain rations are not abundant, where supplementary application of fertilizers can be greater than the exhaustion of fertility of the land, the proportion of land for the triple cropping system of food grains should be lowered. The area for the triple cropping system of wheat-rice-rice throughout the province should be controlled at below 5 million mu, a 28 percent reduction of the over 7 million mu in the peak period of development. In most of the regions throughout the province, future reform of the cropping system should mainly be the development of the triple cropping system of food grains and economic crops supplemented by the triple cropping systems of food grains and the double cropping systems of food grains and economic crops and food grains and green manure crops. This can better adapt to the socio-economic and productive conditions of the present stage. There are more advantages in developing the triple cropping system of two food grain crops and one economic crop, such as wheat-peanuts-rice (or wheat-rice-peanuts), peanuts-rice-potato, soybean-rice-rice, rice (companion crop)-jute-rice, peanut (companion crop)-jute-rice, rice-rice-vegetables and the double cropping system of rice (or peanuts, soybeans)-sugarcane in rotation cropping, intercropping and companion cropping: One advantage is that they can sustain increased yields of food grains and can give a definite proportion of planting to economic crops. In medium and high yielding regions, developing the double cropping system of rice-peanuts and peanuts-potatoes will give an overly large proportion to the original economic crops and they cannot adapt to the ever increasing need for food grains in society. But overly expanding the triple cropping system of food grains such as barley-rice-rice will also limit the development of economic crops and seriously exhaust the land's fertility. The triple cropping system of two food grains and one "economic crop" has a suitable proportion and it can better coordinate the conflicts of all sides, unifying food grain production, production of economic crops, utilization of land and nurturing of land. The experience of many places has proven that planting one crop of food grains less and substituting it by planting leguminaceous economic crops can produce double bumper harvests of food grains and oil. Even if less food grains are harvested temporarily, but over many years, unit yield and total yield of food grains can continue to rise and reach a new level. The second is that it provides a broad leeway for the development of economic crops and makes it possible to fully utilize our province's unique natural resources. The third is banking of fertilizers and nurturing the fertility of the soil, solving the problems in organic fertilizers

and establishing a firm foundation for the continued increases in yield. According to studies, each mu of peanuts can fix over 8 to 12 jin of nitrogen. Each mu of soybeans can fix over 10 jin of nitrogen. Each mu of astragalus can fix 8 to 9 jin of nitrogen. Each thousand jin of peanut seedlings can increase the yield of rice by 80 to 100 jin. Each jin of peanut bran can increase the yield of rice by 3 to 5 jin. Planting of rice in fields previously planted with peanuts can produce an increased yield of 80 to 100 jin of rice per mu. According to the fixed point studies conducted by the soil and fertilizer institute of the provincial agricultural science academy, 3 years after planting the triple cropping system of two crops of food grains and one crop of oil crop, the soil's fertility rose remarkably. The tilling layer which was shallow deepened, the soil which was grayish yellow changed to grayish black, the soil which was compact became loose, the unit weight (the comprehensive indicator that reflects the changes of such factors as soil's fertility) dropped to 0.14 - 0.17 gram/centimeter^3, while the porosity of the soil rose by 5.3 to 6.4 percent. The content of organic matter in the soil rose by 0.3 to 0.4 percent, the content of nitrogen rose slightly, and the amount of phosphorus and potassium increased more. Rotation cropping with jute and sugarcane can also raise the productivity of the rice fields. Each mu of jute can provide 1,000 to 2,000 jin of remnant fertilizers, roots and leaves. Each mu of land previously planted with sugarcane can provide remnant fertilizers for planting rice and can produce an increased yield of 40 to 50 jin of rice. The third is that it can fully utilize light and temperature resources. According to surveys conducted by the provincial academy of agricultural sciences in Boluo and Huiyang counties, the utilization rate of light and temperature conditions and the growth seasons of the entire year of the triple croppings of wheat-peanuts-rice and soybeans-rice-rice reached 80 to 90 percent, while the controlled double cropping system of double season rice reached only 60 to 65 percent. The rate of the triple cropping system of rice-rice-rice was 70 to 75 percent. The fourth is that it is advantageous to the development of animal husbandry. In all the commune brigades where the proportion of the triple cropping system of food grains and oil crops is larger, collective hog raising was able to develop rapidly because massive amounts of bran and vines were provided by the bean crops and were made into powder as feed. The fifth is that its economic return is great and it can quickly improve the livelihood of the commune members. According to research data compiled at fixed localities in Huiyang County by the soil and fertilizer institute of the provincial agricultural science academy, the productive value of each yuan of investment of the triple cropping system of wheat-peanuts-rice was higher than the system of wheat-rice-rice by 19 percent. The productive value of each day of labor was higher by 26.5 percent. Some brigades increased the area of triple cropping of double crops of food grains and one crop of oil crop and the amount of rationed food grains, rationed oil and cash income all rose visibly.

In low yielding rice fields, the conflict for "fertilizers" is more outstanding. The proportion of crops that nurture the land should be even greater. it is suitable to massively propagate rotation cropping of paddy rice and peanuts. The planting of winter green manure and bean crops should be expanded. These should be strategic measures to hasten the banking of the fertility of the land and change low yields to high yields. An alternate system of improving the soil and

increasing fertilizers and sustaining increased yields of food grains and oil is to use the double cropping system of rice-peanuts, peanuts-rice, peanuts-rice-green manure, rice-rice-green manure, beans-rice-green manure as the major systems and using the triple cropping system of two food grain crops and one oil crop as a supplementary system.

Each person in our province has only 8/10s of cultivated land, below the national average. Therefore, the planting system must be highly intensified. Multiple croppings must be planted to a highest degree possible on a unit area, more work must be done and more investments must be made to greatly elevate the rate of production of the soil so that the need for agricultural products by large numbers of people can be satisfied. This is not the same as in the United States where people are few and land is plentiful. These countries have a very high rate of labor productivity, but the productivity of the land is lower than our nation. We must walk our own road. Because our province's cultivated land is scarce, to increase the yield of food grains and to increase the yield of economic crops as well as to expand the planting of green manure, interplanting and companion planting must be grasped to coordinate the conflicts of competition for land and for planting seasons among crops. For example, the interplanting of wheat and astragalus, interplanting of peanuts and wheat, interplanting of winter tobacco wheat, interplanting of vegetables and wheat, companion planting of rice and jute, companion planting of peanuts and jute, companion planting of rice and sugarcane, companion planting of peanuts and sugarcane are all ways which have proven to be good methods after many years of test planting and they are suitable for expansion and popularization.

Our province's territory is expansive. The differences in natural, economic and productive conditions are very great. "The southern branches face the warmth while the northern branches are cold, one spring wind has two different aspects." Reform of the planting system must emphasize suiting measures to local circumstances and "doing everything with one single effort" must never be done. Different conditions require different structures in reforming the planting system. In different types of productive regions, a reasonable planting and rotational cropping system that is based mainly on one or two planting systems combined with a multiple planting system should be gradually studied and established.

When people set up a planting system, they must do the work in an objective way so that it can be compatible with the natural, economic and productive conditions. When the conditions do not change, the system should correspondingly be firmly established. When the conditions change, and when the limiting factors are broken through, new reforms should be made. Engels said: "The productive forces under man's control are endless. Using capital, labor and science, the gain from the land can be raised without limit." We should strengthen scientific experimentation, create conditions, promote the planting system to progress towards an even higher stage to obtain even greater economic returns.

9296
CSO: 4007

'XINHUA' REPORTERS CALL FOR PROTECTING FORESTS IN GUANGXI

OW232359 Beijing XINHUA Domestic Service in Chinese 0702 GMT 22 Oct 80

[Letter from XINHUA reporters: "No Further Destruction of the Natural 'Green Reservoir'"]

[Excerpts] Nanning, 22 Oct (XINHUA)--Dayaoshan is a treasure mountain located in central Guangxi. It is so called because there are both forests and sources of water.

There is sufficient rainfall in the Dayaoshan area. The average annual rainfall is 1,900 millimeters, with the maximum of some 3,000 millimeters, or 25 percent more than that registered in the surrounding counties. According to findings by the autonomous region in a water-source forest investigation conducted in 1977, the annual volume of water (including forest water conservation and runoff) produced in the Dayaoshan forest area is 2.4 billion cubic meters. For this reason, the area has been hitherto called the natural "green reservoir." The rich amount of water flows to the surrounding counties through 25 rivers and, in addition to watering some 30,000 mu of paddy fields belonging to seven communes of the Jinxiu Yao Autonomous county in the Dayaoshan area, it also directly irrigates more than 850,000 mu of farmland belonging to 7 counties and 41 communes in the adjacent 4 prefectures.

However, this important forest area with abundant source of water is subjected to continued, serious destruction. In the 20 years, from the time of cutting trees to make charcoal for refining iron and steel in a big way in 1958 up to the period of the 10 chaotic years, an average of 16,000 mu of forests were destroyed every year as a result of reclaiming wasteland to plant grain crops and wanton tree felling. Added to the more than 200,000 mu destroyed by forest fires, the total area of forests destroyed is equal to two-thirds of the area afforested and preserved in the same period.

Since large tracts of water-source forest were destroyed, the forest area's capability of conserving water and soil has decreased while disastrous droughts have increased and the amount of special forest products has been sharply reduced. According to the findings of an investigation conducted in 1977, the regular water flow of 22 out of the 25 comparatively large rivers has decreased one-third compared with the time prior to 1958.

This condition has aroused the attention of the Autonomous Regional Party Committee and Regional People's Government. However, due to the lack of specific measures taken, the act of destroying water-source forests is continuing.

Furthermore, the grain ration for commune members in the forest area has been always lower than that for the commune members of the surrounding grain-producing counties. Last year, the ration for commune members in the surrounding grain-producing counties was over 600 jin while that for the commune members in the forest area was merely 420 jin. The people in the forest area are urged to protect water-source forests but are not given enough food to eat. What can they do if they do not choose to reclaim some forest land to grow grain crops?

Pending a solution to this practical problem, the protection of the water-source forests in the Dayaoshan area remains a lip service.

The hundreds of thousands of people of various nationalities who share weal and woe with the water-source forest area in Dayaoshan are shouting with a loud voice: the leaderships at all levels are requested to take practical steps to protect the Dayaoshan water-source forests. No further destruction to the natural "green reservoir."

CSO: 4007

BRIEFS

COTTON PROCUREMENT MEETING--Hebei Province recently held a conference on procurement of cotton and agricultural and sideline products. At the closing session, Yue Zongtai, deputy secretary of the Provincial CCP Committee and vice provincial governor, attended and spoke. [Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 15 Sep 80]

HEBEI ANTI-DROUGHT INSTRUCTION--The Hebei Provincial CCP Committee and the Provincial People's Government recently issued instructions on fighting drought and promoting livestock production. The instructions said: Party committees and governments at all levels must attach great importance on protecting livestock and lay a good foundation for livestock production. The instructions proposed six measures for combating drought and protecting livestock: 1) implement all policies concerning the raising of livestock; 2) all departments concerned must promote pig procurement work and increase pork sales; 3) mobilize the communes and brigades to promote fodder supply; 4) work hard to fulfill or overfulfill the state's quota for livestock production; 5) improve breeding techniques and raise the breeding rate; and 6) regulate the responsibility system of livestock production. Party organizations at all levels must understand the conditions in every locality and help them fight against drought. [HK161340 Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 18 Sep 80]

HEBEI RELIEF GRAIN--The Party Central Committee and the State Council were concerned with the livelihood of the people in the disaster areas and decided to appropriate 1 billion jin of relief grain to Hebei Province in August, September and October. By 16 September, Zhangjiakou, Chengde, Hengshui and Cangzhou Prefectures had received 0.236 billion jin of relief grain. Heilongjiang Province also sent 33 million jin of grain to Hebei Province in September to provide disaster relief. [Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 19 Sep 80]

CSO: 4007

MANAGEMENT SYSTEM FOR AGRICULTURAL RESEARCH CHANGED

Beijing GUANGMING RIBAO in Chinese 27 Jul 80 p 1

[Article by Zheng Xiaofeng [6774 4562 2800]: "Heilongjiang Province Reforms Agricultural Research System. Relies on Scientific and Technical Strength To Hasten Development of Agriculture"]

[Text] Heilongjiang Province recently changed its system for the management of agricultural research, which was based on the administrative system, to a new agricultural research management system based on production needs, local characteristics, special strengths, and facilities in order to quicken the pace of agricultural modernization.

Heilongjiang Province came to realize as the result of long experience that basing its system for the management of agricultural research on the delineation of administrative districts had many drawbacks. For example, half of the 12 major soil categories throughout the province have still not been studied. Only two or three people were studying each of the three low productivity soils that make up 20 percent of the cultivated land in the province. Of the 12 major crop diseases, five are still unknown from a scientific standpoint. Beginning last autumn, the Provincial Agricultural Office and various associated bureaus undertook a wide-ranging investigation of the readjustment of research organizations, and reforms are already underway in three different spheres.

The first is the breakup of "small but complete" and the institution of specialization, regionalization, and a change in the irrational three-tier pattern of distribution of agricultural research among the province, the prefectures, and the counties. The postreform provincial-level research organization will become the core of specialized research. The thrust of research by county-level agricultural institutes, it was decided, would be intermediary research and demonstrations, primarily for promotional purposes to fill in gaps in provincial and prefectural special fields of study. Under the unified guidance of the Provincial Academy of Agricultural Science, and in keeping with the characteristics and special natural advantages of the prefectures, new divisions have been established for prefectural agricultural institutes as to the thrust of their specialized agricultural research, as follows: Songhuajiang Prefecture is to concentrate its research on economic crops. Suihua Prefecture is to emphasize research on soybeans and mechanized farming. Mudanjiang Prefecture is to conduct research on paddy rice, tobacco, beekeeping and white bentonite soil, principally. Nenjiang Prefecture is principally to do research into foodgrains other than wheat and rice and into drought-resistant farming techniques. Hejiang Prefecture is to carry out research principally on improvements to varieties and farming in the low-temperature lands of the Sanjiang Plan. Heihe Prefecture's principal research area is to be wheat and bean crops grown in high and frigid regions.

The second is the breakup of boundary lines between different fields of endeavor, the institution of coordinated organizations, a change in the mutual lack of communication among various specialized fields and among various branches of learning, and a change in the situation wherein the various links of research, promotion, and production are divorced from one another. The postreform provincial, prefectural and county agricultural offices will take charge of the organization of the coordination among various agricultural research and promotional units.

The third is a change in the situation whereby technical promotion units cannot do technical work, and the institution of a system of personal responsibility. Stations for the promotion of agricultural techniques, livestock veterinary medicine stations, water conservancy stations, forestry industry stations, farm machinery stations, seed stations, soil and fertilizer stations, water and soil maintenance stations, and meteorological stations in each county are units with technical functions that should be engaged in technical promotion, in technical service, and in technical management work. Their authorized strength and operating expenses should not be infringed upon, nor should agricultural technicians be arbitrarily transferred to do nontechnical work; they should be assured that five-sixths of their time will be spent on technical work. Beginning this autumn, every organization on every level in the province, prefectures, counties, and communes shall annually check on the implementation of research work and promotion plans, evaluate and pass judgment on scientific and technical accomplishments, and give prizes for brilliant exploits. In cases where plans have not been fulfilled, the reasons should be looked into, and where the failure has resulted purely from human actions, responsibility should be fixed.

9432
CSO: 4007

ESTABLISHMENT OF COMMODITY GRAIN BASES TO BE ACCELERATED

Beijing RENMIN RIBAO in Chinese 28 Jul 80 p 1

[Article: "Heilongjiang Strengthens Establishment of Commodity Grain Bases To Make the Most of Special Advantages and To Contribute More Grain to the State in the Shortest Possible Time"]

[Text] The Heilongjiang Province Party Committee recently convened its enlarged standing committee to study and implement the State Council's decision on vigorous development of farm mechanization in the northeast and the accelerated establishment of commodity grain production bases, principally for grain and soybeans. The meeting decided that full use would be made of the special advantages of Heilongjiang Province in abundant natural resources for agriculture, and that through the vigorous support provided by the use of state financial and material resources, fully developed modernized bases for agriculture, forestry, livestock raising, sideline occupations, and the fishing industry, with emphasis on commodity grains, would be established as quickly as possible throughout the province to contirubte more foodstuffs to the country rapidly.

Following conscientious discussion and wide solicitation of views by the expanded committee, the Provincial CCP Committee proposed three major measures for strengthening the establishment of commodity grain bases in Heilongjiang Province.

1. Place the mechanization of agriculture on a par with the establishment of commodity grain bases, giving attention to this key link in bringing about the modernization of agriculture. Acting in a practical way on the basis of requirements and capabilities, begin adapting methods to local situations and categorize guidance for mechanization tasks, standards in matching equipment, and speed.

2. Adhering to the policy of walking on two legs, institute a combination of increased yields per unit and expansion of the land area under cultivation. Reclaim 5 million mu of wasteland each year for the next 5 years, as the state has demanded, with 2 million mu being used for state farms and 3 million mu going to people's communes. Party committees at all echelons must give intense and practical attention to this land reclamation work, fulfilling the task in terms of both quality and quantity. Thorough planning must be done from the provincial to the local levels for rational use of land resources, using for agriculture the land that is suitable for agriculture, land suitable for livestock raising for livestock raising, land suitable for forestry for forestry, and land suitable for the fishing industry for the fishing industry. When reclaiming land, attention must be given to the protection of woodlands, grasslands, and reed ponds and to the maintenance of the natural environment and climate, in order to help establish a new ecological balance.

3. Strenthen leadership, rapidly shifting the work of all trades and industries to hasten the establishment of commodity grain bases. All echelons of party and government organizations should place the promotion of farm mechnization and good land reclamation work on the important agenda of the party committees and the government. Each prefecture, municipality, county, and commune should formulate plans for the substantial mechanization of agriculture next year and for the next 5 years, using production brigades as the basic units therefore, basing these plans on investigation and study, and acting on policy guidance provided by the Provincial CCP Committee. They should also formulate specific, detailed plans for the reclamation of land, such plans to be implemented by counties, communes, and farms. The masses should be fully brought into the deliberations, rather than have everything done from above.

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CSO: 4007

BRIEFS

HEILONGJIANG TIMBER PRODUCTION--In a talk to a station reporter, [Wang Guangwei), secretary general of the Heilongjiang Provincial People's Government and leader of the provincial timber comprehensive utilization group, stressed the need to build Heilongjiang Province into a base for timber production and comprehensive utilization. He said: More than 200 varieties of timber products have been processed in the province. Some have been exported to Hong Kong, America and Japan. This year's total output value of timber comprehensive utilization is estimated at 260 million yuan, 85 percent higher than last year's actual output value. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 18 Oct 80]

HEILONGJIANG AUTUMN HARVEST--Heilongjiang Province has so far reaped more than 85 percent of its autumn-harvested crops. Most communes in Songhuajiang Prefecture have completed their harvest work. Suihua and Hejiang Prefectures have completed more than 90 percent of the work. Of the 23 million mu of soybeans in the province, 14 million mu has been reaped. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 10 Oct 80]

CSO: 4007

SOYBEAN PRODUCTION RAPIDLY RESTORED

Chengzhou HENAN NONGLIN KEJI [HENAN AGRICULTURAL AND FORESTRY SCIENCES AND TECHNIQUES] in Chinese No 6, 10 Jun 80 pp 17-18

[Article by Tu Jiaji [1458 1367 7535] of the Provincial Agricultural Office Rapidly Revive Our Province's Soybean Production]

[Text] I. Our Province Has a Long History as a Summer Soybean Producing Region

Our province has a long history of planting soybeans. Inscriptions on bones and tortoise shells of the Yin Dynasty ruins already contained records of "shu."

During the 1950's, our province's soybean production developed smoothly from the 18.46 million mu at the beginning period after Liberation (3-year average of 1949-52) to 24.48 million mu (5-year average from 1953 to 1957). Total yield rose from 1.79 billion jin to 2.11 billion jin. Each year, over 20,000 tons were exported by the foreign trade departments. At the time, the total area of soybean, peanuts and other indigenous beans was 40 million mu, constituting one-third of the total cultivated land of the province. But after 1960, production planning lost balance, unilateral emphasis was placed on the belief that soybean was a low-yield crop. Some localities inappropriately expanded the areas of planting of corn and sweet potatoes and soybean was eliminated. At the same time, discrimination against soybean was reflected in production management. The "three afterwards" and "three refusals" were exercised, i.e., plant soybeans afterwards, manage soybeans afterwards, harvest soybeans afterwards, refusal to provide fertilizers, investment and labor force for planting soybeans, thus the area of planting soybeans became smaller and smaller and the level of production became lower and lower. In 1978, the area of soybeans had dropped to 13.073 million mu, total yield was 1.39 billion jin. A situation of stagnation occurred. A series of problems in production and livelihood occurred. The more the land was planted, the more infertile it became. The food structure became bad and there was a shortage in good feed for domesticated animals. To nourish the land for a balanced development of agriculture and animal husbandry, to improve the livelihood of the people of the cities and villages, develop light industry and expand foreign trade, our province's soybean production must be revived and developed with great efforts.

II. Multiple Uses of Soybeans

Soybean contains 40 percent protein, 20 percent fat, and its nutritional value is very high. Soybean oil is unsaturated fatty acid. It can soften the blood vessels and cut down the function of cholesterol. Its content of iodine is high and it contains a semi-dry oil. Soybean has many uses in light industry, national defense industries and the food industry. The United States is advocating the use of soybean protein to make meat substitutes to replace pork and beef, the use of soybean oil to make imitation butter and cheese to replace real butter and cheese, and the use of soybean fibers to make high-grade nylon. Soybean utilizes nodule bacteria to fix nitrogen. Soybean plants can fix 16 to 17 jin of nitrogen per mu per season. Besides using up 7 to 8 jin of nitrogen themselves, a lot of nitrogen is left in the soil. It can be absorbed and utilized by the following crop. The stalks and pods of soybeans are all feed for domesticated animals and can also be used as fuel. Soybean cakes are precious and fine feed.

III. How Can Our Province's Soybean Yield Be Increased?

Our province has always neglected research in improving soybean varieties and techniques of cultivation. With the additional emphasis on the belief that soybean is a low-yielding crop, planning was imbalanced, therefore the varieties have become impure and degenerate. Serious damage has been caused by sowing during crop openings when the soil was hard, lack of fertilization and lack of irrigation, lack of thinning the seedlings and lack of intertilling, three insect pests (etiella zinchenella, clanis bilineata and cutworms). To revive and develop our province's soybean production, the following techniques must be grasped well and conscientiously:

(1) Selective use of superior varieties: Besides efforts to develop the work of improving the varieties, the presently available superior varieties of soybeans must be actively popularized. The varieties of soybeans suitable for propagation in our province are Xuzhou 421, Zhengzhou 135, Zhengzhou 126, Xudou No 4, Yaojin No 5. These varieties generally yield 20 percent more than the mixed and degenerate soybean varieties. Although soybean is strictly a self-pollinating crop, it is very easily mixed mechanically, therefore selection of plants must be insisted upon to establish plant rows, plant line nurseries to extract the pure ones and revive the strong plants. In addition, our province has many historically well-known and precious soybean varieties such as wai shi da qing dou, tian e dan, shuang qingdou. These must be produced again quickly to satisfy the needs of foreign and domestic markets.

(2) Reasonable application of fertilizers and mixing bacterial fertilizers with seeds. Application of fertilizers for soybean is determined by the fertility of the soil of the previous crop. Generally, only a small amount of phosphorous fertilizers or no fertilizers are needed for land of a forecrop of wheat yielding more than 500 to 600 jin per mu. In wheat fields with a forecrop yielding only 300 to 500 jin, phosphorous fertilizers should be applied as the major fertilizer and nitrogen fertilizers should be applied during the seedling period and flowering period accordingly. Wheat fields with a low-yielding forecrop of below 300 jin require the application of 3,000 to 5,000

jin of farm house manure as base manure per mu and nitrogen fertilizers must be applied accordingly during the seedling period and flowering period.

Soybean utilizes nodule bacteria to fix nitrogen. Nodule bacteria uses haemoglobin and molybdenum as catalysts to synthesize nitrogen in the air and hydrogen in water to form amino acids. Therefore, applying ammonium molybdic acid at the roots of soybean as sidedressing will produce a remarkable increase in yield. In 1978, our office applied ammonium molybdic acid using an airplane over more than 5,000 mu during the soybean's beginning flowering period in Xihua County. The chemical was applied as sidedressing for the roots. Each mu used 20 to 35 grams of ammonium molybdic acid diluted with 100 jin of water. The average increase in yield was from 8 to 11 percent.

Inoculating nodule bacteria into soybeans can hasten the formation of root nodules. Generally, mixing 15 to 20 grams of bacterial powder with the seeds per mu can produce an increase of 10 percent in yield.

(3) Sufficient moisture at the time of sowing assures full seedlings and even seedlings. The seeds of soybean are large, they contain a lot of oil and protein which do not decompose easily. At the time of budding, the seeds absorb water and weigh 1.5 times their own weight. Drought frequently occurs at the beginning of summer in our province. Therefore, whether soybean should be sown by plowing the soil is determined by the moisture conditions of the soil after harvesting of wheat. When the moisture condition is good or where water conservancy is available, the soil must be plowed or raked to remove the stubble for sowing. Generally for moist conditions, the moisture must be retained when the soil is hard during the opening for sowing. If torrential rain falls after sowing, hardpan soil must be broken when the soil becomes hard to preserve all the seedlings. After the seedlings emerge, the seedlings must be thinned in time. Generally seedlings that are thinned by hand will produce an increased yield of 20 percent more than seedlings that have not been thinned.

(4) Conscientiously prevent and control diseases and insect pests.

In general, as long as scientific planting is implemented, the soybean yield will surely be increased rapidly.

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CSO: 4007

DRAFT ANIMAL POPULATION IN HENAN CONTINUES TO DECLINE

OW240038 Beijing XINHUA Domestic Service in Chinese 0253 GMT 23 Oct 80

[Letter by XINHUA reporter Zhou Guohua: "Why is the Production of Draught Animals Continuing to Decline in Henan?"]

[Excerpts] Zhengzhou, 23 Oct (XINHUA)--Since the 3d Plenary Session of the 11th Party Central Committee, great importance has been attached to animal husbandry throughout the country and a fairly large increase in livestock production has been achieved. However, draught animal breeding has not developed satisfactorily in Henan Province, which plays an important role in animal husbandry in China's agricultural zone. A decline in livestock breeding has been reported for years, except for a slight increase in 1979, and livestock production is now tending to decline.

In the early period after liberation, the number of draught animals bred throughout Henan Province once reached some 7 million head. After 30 years, the number has dropped, instead of increasing, to some 5 million head.

Funds for livestock breeding should account for 32.1 percent of the total funds for agriculture and animal husbandry in each province, as stipulated by the state council. Funds appropriated for livestock in Henan amount to only 23.78 percent.

Many of the 20,000 veterinary workers in the province cannot now get paid their monthly wages, not to mention funds for activities. Due to lack of funds, work on the prevention and control of livestock diseases has been suspended at many people's communes and production brigades. As a result, whenever an epidemic occurs, nothing can be done but to watch the livestock die.

It is obvious that many serious problems remain to be solved in promoting draught animal breeding in Henan Province. However, to make the matter worse, the leading departments concerned in Henan Province have not taken any effective measures.

On behalf of the masses, we would like to make this appeal: will leaders and leading departments concerned consult with each other and appropriate a small amount of funds to save these draught animals?

CSO: 4007

BRIEFS

PUREBRED WHEAT VARIETIES--Virtually all major wheat varieties grown in Xinxiang Prefecture of Henan are purebred strains. This year this prefecture produced more than 73.5 million jin of purebred wheat seeds, some 6 million jin of which was supplied to other areas after all local demands were met. [Beijing RENMIN RIBAO in Chinese 10 Sep 80 p 5]

CSO: 4007

BRIEFS

PEANUT HARVEST--A bumper yield was reported from 80,000 mu of peanuts in Sihong County of Jiangsu this year, with total output reaching 16 million jin, an 3-fold increase over 1979. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 13 Oct 80 OW]

COUNTY AFFORESTATION--As of now, Feng County, Jiangsu, has afforested 95,000 mu of land, planted 25 million trees on the "four sides," surrounded 980,000 mu of the 1.2 million mu of farmland with forests and interplanted grain with tong trees on 110,000 mu of land. Now 11.8 percent of the county is covered with forests. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 9 Oct 80 OW]

AUTUMN SOWING--Xinyi County plans to plant 850,000 mu of wheat, barley and naked barley and expand the area of green manure and rape by 420,000 mu this fall. So far, 175,000 mu of green manure and 55,000 mu of rape have been planted. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 7 Oct 80 OW]

INCOME FROM COMMUNE INDUSTRIES—This year Suzhou Prefecture of Jiangsu has decided to take 15 to 20 percent of the profits made by commune- and brigade-run industries and put it into the distribution funds of production teams so that the commune members may derive benefit directly from the development of these industries. During the first half of this year, the total output value and profits of these industries were both record highs. The output value was 1.613 billion yuan, an increase of 60.7 percent over the same period of last year, while their realized profit was 248.6 million yuan, up 69.1 percent from the comparable period of last year. [Nanjing XINHUA RIBAO in Chinese 13 Sep 80 p 1]

CSO: 4007

LIBERALIZED POLICY PROMOTES SUGAR BEET CULTIVATION

Beijing RENMIN RIBAO in Chinese 5 Jul 80 p 2

[Article by Xinhuashe correspondent Su Wuchen [5685 0582 6591]: "Liberalization of Economic Policy in Jilin Promotes More Sugar Beet Cultivation. Linkage of Grain and Sugar and Division of Profits From Sugar Beet Processing Instituted"]

[Text] Jilin Province has acted realistically to liberalize economic policies and to institute a system linking grain and sugar and dividing profits from the processing of sugar beets to encourage communes, production brigades, and individual commune members in sugar beet producing areas to plant more sugar beets and care for them well.

By division of profits from the processing of sugar beets is meant that half of any profits realized by sugar refineries from the processing of sugar beets to produce sugar are to be returned to the sugar beet producing units (or individuals). Not included are aggregately used profits made by sugar refineries from the processing of raw sugar, alcohol, or monosodium glutamate. The linking of grain and sugar means that once the sugar beet producing units have fulfilled production quotas handed down by the state, for each additional 7 jin of production, the state will make an award sale of 1 jin of wheat. Following promulgation, this scheme was first tried out in the two counties of Nongan and Huaide, which account for one-third of the province's total output of sugar beets.

Last year Jilin Province liberalized economic policies, raised purchase prices, offered additional prices for excess production, readjusted base figures for state procurement of grain, and guaranteed food grain standards for commune members so that commune members in sugar beet producing areas would have more benefits and sugar beet production would grow. Last year per unit yields of sugar beets throughout the province were 29.4 percent higher than for the previous year, and the quantity purchased by the state increased by 23.4 percent. This heartening change made the Jilin Provincial CCP Committee realize that the greater the shortage of agricultural by-products, the greater the need for liberalization of policies. When the farmers have benefits, they have enthusiasm; production then develops, and the economy becomes lively. On the basis of this realization, the Provincial CCP Committee decided it would continue to carry out last year's sugar beet policies while liberalizing policies this year, instituting a linking of grain and sugar and a division of profits from the processing of sugar beets, thereby further arousing the enthusiasm of the farmers for growing sugar beets.

Following announcement of these two policies at the Jilin Provincial Sugar Beet Conference convened in March this year, cadres and commune members in sugar beet

growing areas welcomed it. According to statistics, the sugar beet area throughout Jilin Province amounts to 1.2 million mu this year, an increase of more than 400,000 mu over last year and a 20 percent increase over the original plan. Now seven sugar plants throughout the province have already signed contracts for the production and purchase of sugar beet production with more than 22,000 sugar beet production teams. The production teams guarantee a certain production area and output of sugar beets, and the sugar plants guarantee to follow government policy to purchase the sugar beets, to supply seeds and pesticides, and to send technical cadres to provide guidance in sugar beet production.

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CSO: 4007

BRIEFS

PREFECTURE ANIMAL HUSBANDRY--Livestock production has reached a new high in Baicheng Prefecture, Jilin Province, this year. The total number of cattle and sheep in the prefecture has reached more than 1.405 million. Privately owned cattle and sheep in the prefecture now number more than 500,000, or over 35 percent of the total. [Beijing Domestic Service in Mandarin 0400 GMT 7 Oct 80]

JILIN AUTUMN HARVEST--By 12 October, over 52 million mu of various crops had been harvested in Jilin Province. This year's autumn crop has been harvested more quickly and efficiently than last year's. [SK201025 Changchun Jilin Provincial Service in Mandarin 1100 GMT 17 Oct 80]

CSO: 4007

BRIEFS

LIAONING VEGETABLE SUPPLY--The Liaoning Provincial People's Government has issued a circular on autumn vegetable procurement and supplies. It states: in spite of this year's reduction resulting from natural calamities, vegetable supplies will be guaranteed. The province has arranged to supply the markets with 1.5 billion jin radishes and cabbage, in order to ensure ample supplies, all collectives, including enterprises, plants and army units, must abide by the state policy. They are not permitted to purchase vegetables from production units in rural areas. Vegetable-growing units are not permitted to sell them either. One who violates this rule must be seriously dealt with. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 17 Oct 80]

FENCHENG TOBACCO--Fengcheng County in Liaoning Province has harvested 129,600 dan of tobacco, an increase of some 30,000 dan over that of the corresponding 1979 period. Fengcheng County has planted some 70,000 mu of tobacco this year--one third of the total acreage of tobacco fields in the province. Estimated profits are about 65 million yuan this year. It is planned that about 46,000 dan will be exported, from which 600,000 yuan will be earned. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 17 Oct 80]

LIAONING AUTUMN HARVEST--By 18 October, Liaoning Province had harvested 46 million mu of various crops, 95 percent of the total areas to be harvested. By now, over 2 billion jin of grain have been threshed and over 600,000 dan of unginned cotton have been gathered. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 20 Oct 80]

LIAONING MEAT SUPPLIES--After the readjustment of markets, Shenyang Municipality has improved meat supplies. Some 12 million tons of beef and mutton were sold during the period from January through September, an increase of 95.5 percent over that of the corresponding 1979 period. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 20 Oct 80]

CSO: 4007

MORE SUGAR BEETS SHOULD BE GROWN IN NEI MONGGOL

Beijing RENMIN RIBAO in Chinese 5 Jul 80 p 2

[Article by Xinhuashe correspondent Wang Wenliang [3769 2429 0081]: "Nei Monggol Should Make Use of It's Special Advantages for Growing Sugar Beets"]

[Text] Geographic and climatic conditions in the Nei Monggol Autonomous Region are exceptionally favorable for the growing of sugar beets. The sugar content of sugar beets produced here is higher than elsewhere in the country. Since every nationality began large area cultivation of sugar beets in 1953, abundant experiences have been accumulated in the growing, tending, and prevention of diseases and insect pests of sugar beets. Nevertheless, for many years sugar beet production in Nei Monggol has stagnated. Last year, the 760,000 mu sown to sugar beets amounted to only 1 percent of the total cultivated area.

The main reason that sugar beet production does not rise is poor handling of conflicts between grain and sugar production. Nei Monggol is presently not self-sufficient in grain production, and some people feel that once there is sufficient grain to eat, there will be time enough to talk about growing sugar beets. Still others ask whether you eat grain or sugar. It appears that if the food problem is to be solved, sugar beets will have to stand aside.

As a matter of fact, this is a lopsided view. They see only the aspect of mutual competition for land between grain and sugar without seeing the aspect of the mutual advancement of grain and sugar. Nei Monggol is a vast and thinly populated land where labor is in short supply. An average of 22 mu of land is cultivated by each working farmer in rural villages, and in some places, farmers work more than 50 mu of land. If agriculture is to develop on a large scale, mechanization will be required. But mechanization requires large amounts of capital, and where will the capital come from? Planting of more economic crops such a sugar beets is a good way to increase the accumulation of capital. A survey shows that were each commune and brigade to use 5 percent of its land for the growing of sugar beets, the income derived would amount to more than 20 percent of total agricultural income.

The role of greater cultivation of sugar beets in the promotion of grain production is also very great. For every ton of sugar beets produced, the heads, stems, tail ends of roots, and unused protions amounts to an additional ton of by-products. These by-products make a good hog feed. One ton of sugar beet by-products plus some other feed is sufficient to feed a large fat hog. For this reason, farmers in some sugar beet producing areas say that sugar is not all that comes from a sugar beet; there is also grain and meat to eat. This little rhyme expresses very well the dialectical relationship of the mutual advancement of grain and sugar.

In terms of making the most of the special economic advantages of the autonomous region and striving to get ideal economic benefits at the least possible cost, planting more sugar beets and producing more sugar in Nei Monggol makes since. At the present time, average per unit yields of grain in the autonomous region are only 156 jin. Until fundamental changes are made in production conditions, growth of grain production here will require a lot of effort, but if sugar beets were grown, per mu yields of 2,000 jin would be quite easy to achieve. The income from 2,000 jin of sugar beets could amount to more than 90 yuan. Figuring an average 8 jin of sugar beets to produce 1 jin of sugar, 2,000 jin of sugar beets will produce 250 jin of refined granulated sugar. The output value of 250 jin of granulated sugar and somewhat more than 100 jin of grain cannot be compared. Therefore, the growing of more sugar beets would be extremely beneficial to the country, to the collective, and to the individual.

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CSO: 4007

BRIEFS

NEI MONGGOL AFFORESTATION--Jirem league in Nei Monggol has made headway in afforestation. By now, areas around 2,380 of 3,637 primary and middle schools, 4 of 6 railway lines, 12 of 26 highways and about 23 percent of the rivers banks in the league have been afforested. Some reservoirs have also planted trees. Shelter forests cover more than 100,000 mu of land. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 16 Oct 80]

CSO: 4007

BRIEFS

PIGSKIN PROCUREMENT--Jinan, 11 Oct (XINHUA)--In the past 2 years, Pingdu County, Shandong, procured some 238,000 sheets of pigskin annually. [Beijing XINHUA Domestic Service in Chinese 0117 GMT 11 Oct 80 OW]

SHANDONG COUNTY MUSHROOM PRODUCTION--Jinan, 16 Oct (XINHUA)--The people's air defense departments in Shandong's Yanzhou County are making use of underground air defense passages to grow edible fungi and mushrooms on a trial basis. They grow mushrooms on cottonseed cakes and, after 3 or 4 months, can collect some 30 jin from each square meter. Edible fungi are planted on tree branches, and each 100 jin of branches can yield 1 jin of dried edible fungi. [Beijing XINHUA Domestic Service in Chinese 0842 GMT 16 Oct 80]

CSO: 4007

NEW VARIETIES OF LATE RICE APPRAISED

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 4, 5 Aug 80 pp 9-12

[Article from Grain Cultivation Laboratory, Crop Institute, Municipal Agricultural Academy: "Evaluation of a New Strain of Late Season Rice"]

[Text] The area in the Shanghai environs devoted to the cultivation of late rice accounts for 90 percent of the total area of grain fields, and it occupies a decisive position in grain production. Since Shanghai is located at the northern edge of the semi-tropics, seasonal scheduling for the three crop system is very tight; temperature changes in the weather during the growth stage for late rice seriously impair output. During the past 10 years, per mu yields have fluctuated from 512-732 jin, for an average 612 jin $\pm$ 69.4 jin, or a relative deviation of 11.3 percent and extreme variability in output. Therefore, we took the major representative varieties of late rice, together with strains we had produced, to conduct observations and study of their growth characteristics in the hope of mastering means critical for their cultivation in order both to promote consistently high yields and to offer data for reference in the breeding of varieties.

Test Materials and Methods

There were 14 items of test materials divided into three groups according to their required period of growth. They were sown at different times, and all transplanted at the same time on 4 August, so that the time of harvest for all of them would generally coincide (Table 1). Experiments were jointly conducted by the test farm of our institute, the seed farm of the Huazao Commune, and the Hongwei Scientific and Technical Station of the Jiwang Commune. Seeds were provided by our laboratory. Specification for experiments and field care were completely identical. Unified standards were used to record developments in growth, and the taking of specimens for measurements was all done by our laboratory. Experiments were done according to conventional methods of growing sturdy seedlings at a density of 4 x 4 (cun). Each hole contained from 5 to 7 sprouts; basic fertility of the fields before

Table 1. Basic Facts About Test Materials Provided

	Variety of Material	Total Growth Period (days)	Amount of Seeds Sown (jin/mu)	Time of Sowing (month/day)
Early Ripening	Huxuan 19 (CK)	128	140	6/26
	76057	128	140	6/26
	1404-109	131	140	6/26
	75-1	127	140	6/26
	Liza 23*	108	20	7/12
Medium Ripening	Jianong 15 (CK)	133	120	6/22
	6366	137	120	6/22
	77005	137	120	6/22
	77007	136	120	6/22
Late Ripening	Nong hu No 6 (CK)	144	110	6/16
	Hunanwan**	142	110	6/16
	6507	142	110	6/16
	Jianong 762	142	110	6/16
	Jinong	142	110	6/16

* Exceptionally early maturing strain hybrid fine variety
** Mistakenly mimeographed as Huigeng 713.

planting was 30 dan per mu of composted pig manure, with topdressing of 50 jin of ammonium sulfate thereafter. Fertilizer applications were repeated three times in a random fashion, and control measures against disease and insects were taken three times on the plots, which had a net area of 3 li. The output for individual harvests from each plot was recorded.

Growth Characteristics of Late Rice

(1) Characteristics of Rice Plants: After late geng variety of late rice has been transplanted, the length of daily sunlight suffices its needs for a short period of sunlight daily. Since its vegetative growth period is shorter by 11 days than for single crop late rice, the height of plants is also noticeably shorter, generally 20 to 30 centimeters lower. Among the 14 test material items, short stem types less than 75 centimeters tall included 75-1 and 6366. Tall stem types taller than 85 centimeters included Nonghu No 6, Liza 23 and Jinong. The remainder were all medium stem types. (See Table 2)

Table 2. Late Rice Plant Heights

Plant Type and Height		Height (cm)
Short Stem Type	6366	60.1
	75-1	73.2
Medium Stem Type	6507	75.9
	Jianong 762	77.3
	7707	77.5
	Jianong 15	80.3
	1404-109	80.8
	Huxuan 19	80.9
	Hunanwan	81.6
	77005	83.1
	76057	84.3
High Stem Type	Jinong	89.9
	Nonghu No 6	91.0
	Liza 23	92.0

Growth of late rice in seedling beds was very rapid, but tillering was slow, becoming faster following jointing. In the seedling beds, seedlings grew at a rate of from 0.97 to 1.51 centimeters daily for an average 1.23 centimeters. Between the time of transplanting and the height of tillering, growth of late rice was extremely slow. Except for Liza 23, a hybrid rice that grew 1.07 centimeters daily, 5 varieties of the material grew less than 0.005 centimeters, and the other materials grew at a rate ranging from 0.10 to 0.44 centimeters. The overall average was one-fifth that in the seedling beds. Following jointing, the growth rate ranged from 0.33-1.37 centimeters, which was about 3 times the overall average for the tillering stage, and more than one-half that in the seedling bed stage.

Elongation of late rice produces five internodal segments, for the most part, with a minority of plants producing four or six segments. Various kinds of material fluctuated at from 4.4 to 5.7 for an average 4.9. Elongation to the first node at the base was the shortest, usually from 1.1 to 2.4 centimeters, with each segment becoming longer and longer, with the one just below the panicle being the longest. The weight of internodal segments is lighter for those on both ends and heavier for those in the middle. The first segment at the base is lightest in weight with the second lightest being either the one just below the panicle or the second one from the base. The second or third segments below the panicle are heaviest. The dry weight per unit of length of the internodal segments gives an idea of the toughness of the segments. The toughness is exactly the opposite of the situation

Table 3. Internodal Segment Data About Late Rice Varieties Materials

(1) 单位长度干重(克/厘米)

品2)种	3)沪选19	76057	751	109	4)黎杂23	5)加农15	6366	6)农虎6号	7)沪南晚	6507	8)加农762	9)纪农
10)基部第一节	0.23	0.50	0.45	0.67	0.56	0.78	0.47	0.30	0.73	0.57	0.28	0.76
11)第二节	0.23	0.31	0.85	0.24	0.40	0.33	0.24	0.19	0.28	0.25	0.45	0.54
12)第三节	0.16	0.23	0.48	0.17	0.23	0.27	0.16	0.15	0.21	0.14	0.25	0.36
13)第四节			0.55								0.19	0.24
14)穗下第二节	0.13	0.17	0.27	0.14	0.15	0.21	0.14	0.12	0.18	0.15	0.16	0.19
15)穗下节	0.049	0.070	0.097	0.056	0.055	0.080	0.067	0.062	0.079	0.075	0.081	0.012
16)节间数	4.6	4.4	5.1	4.9	4.7	4.7	4.8	5.0	4.9	4.9	4.5	5.7

Key:

1) Dry weight per unit of length (grams per centimeter)
2) Variety
3) Huxuan 19
4) Liza 23
5) Jianong 15
6) Nonghu No 6
7) Hunanwan
8) Jianong 762
9) Jinong
10) First segment at the base
11) Second segment
12) Third segment
13) Fourth segment
14) Second segment beneath panicle
15) Segment beneath panicle
16) Number of segments

pertaining to the length of segments. The first segment at the base is toughest with each segment becoming progressively less so up the length of the stem. (Table 3) It has been generally suspected that the toughness of internodal segments is related to resistance to lodging. However, Huxuan 19, which is prone to lodging, has a rather low dry weight per unit of length of segments, while the dry weight is relatively high for Jianong 15, which is prone to lodging, but not high for 6366, which has good antilodging properties. It seems that resistance to lodging is also related to plant height and other characteristics.

This year the leaf area on single seedlings of the late rice was more than 42 cm^2, and on most varieties of the material it was more than 50 square centimeters. At the height of the tillering stage, leaf area for individual plants ranged from 54.6 to 82.4 cm^2, and during the booting stage, it ranged mostly from 100 to 200 cm^2. During the interval between transplanting the seedlings to the height of tillering, growth of leaf area was slowest. Except for Liza 23, a hybrid rice, only a minority of varieties had a daily growth per plant greater than 1 cm^2. Most were less than 0.80 cm^2. The minimum was only 0.18 cm^2. In the interval from jointing to booting, leaf area rapidly expanded. For most varieties, each plant increased by more than 4 cm^2 daily. Expansion of leaf area and speed

of growth of rice plants coincided. This demonstrates that though the period of young panicle differentiation is an important reproductive growth stage, it is also an important stage for vigorous vegetative growth. Thickness of leaves for late rice at the stage of transplantation was 3.58 to 4.36 mg/cm^2; during the height of tillering, it was 3.54 to 4.48 mg/cm^2; during the booting stage it was 3.52 to 5.05 mg/cm^2; during the in-the-milk stage, it was 3.80 to 5.20 mg/cm^2, and during the ripening stage, boot leaves were 4.62 to 6.69 mg/cm^2. Leaves that were young in age were tender and thin, and they became longer and thicker with leaf age, the boot leaves becoming thickest. Experiments have demonstrated that the photosynthesis effectiveness rate is higher for thick leaves than for thin ones. Therefore, the thickening of leaves as they are and their physiological function both increase progressively. As growth continues, the dry weight of leaves comes to occupy an increasing proportion of the dry weight of the material aboveground. During the transplantation stage, it fluctuated around 45.6 to 63.0 percent; during the height of the tillering stage, it ranged from 35.6 to 51.5 percent; during the booting stage, it was 32.7 to 43.4 percent; and following the in-the-milk stage, it was 11.9 to 17.4 percent. The reduction in the dry weight of the leaves resulted from the accumulation of material.

(2) Colony Development: The vegetative growth stage for field grown late rice is short, and the onset of tillering is quite concentrated. With transplantation taking place on 4 August, most varieties had begun to tiller by 14 August, and 27 August marked the zenith of tillering. Between 4 and 14 August, tillering was slight, fewer than 4,000 tillers being produced per mu per day. Of these, for more than half the varieties it was less than 1,000. Between 14 and 20 August, great disparity occurred in the increased tillering of different varieties. Both 75-1 and 6366 produced more than 20,000 tillers per mu per day, as did Nonghu No 6 and Hunanwan. Those increasing tillers by from 10,000 to 20,000 included 76057, Jianong 15, 7707, and 6507. The others produced less than 10,000. Of the 14 items of test materials, by 20 August, 10 had a total number of tillers per mu greater than effective panicles per mu, and 2 others were close. Therefore, the increase in tillering speed within a week from the beginning of tillering is a sign of the strength of the effective tillering rate. Between 20 and 27 August, the speed of tillering of the majority of varieties was less than 7,600 per mu per day, and virtually all were ineffective tillers. A characteristic change in tillering is that the onset of differentiation of the young panicles determines a turning from vegetative growth in the plant to reproductive growth. Therefore, for varieties bred in the Shanghai environs that have an increased tillering speed prior to 20 August, when care promotes a speedup in tillering before 20 August, a reduction in tillers occurs about 20 August, and this is of major significance for increases in the number of effective panicles for late rice. (See Table 4)

Table 4. Late Rice Varieties Colony Developments and Acceleration of Tillering (Units of 10,000 per day)

(1)月/日	沪选19 (2)	76C57	1C9	751	籼杂23 (3)	加农15 (4)	6366	农虎6号 (5)	沪南晚 (6)	6507	加农762 (7)	纪 农 (8)
8/ 4—14	0.40	−0.04	0.10	0.03	0.29	0.11	0.19	0.08	0.04	0 26	0.08	0.18
8/14—20	0.77	1.18	0.22	2.25	0.75	1.62	2.03	2.12	2.75	1 27	0.75	0.93
8/20—27	0.76	0	0.49	0.66	0.22	0.17	0.43	0	0.12	−0.43	1.40	0.20
8/27—9/1	0.22	0.38	−0.08	0	0	−0.30	0.22	0.22	0.08	0.38	0.60	0
9/ 1—6	−0.12	−0.60	−0.13	−0.84	0	−0.16	−0.68	−0.44	−1.06	−0.26	−0.42	0.80
9/ 6—15	0	0	0	−0.08	0	0	0.10	−0.26	−0.53	−0.28	−0.22	0.33

Key:
1. Month/day
2. Huxuan 19
3. Liza 23
4. Jianong 15
5. Nonghu No 6
6. Hunanwan
7. Jianong 762
8. Jinong

(3) This year's coefficient for leaf area on late rice at the time of transplantation was between 1.35 and 1.87; at the height of tillering it was between 2.1 and 2.7; during the booting stage it was between 4.4 and 4.7; and at laqishu [5198 2601 3578] it was between 2.0 and 4.6. Between transplantation and the height of tillering, photosynthetic force was 18,133 to 36,467 m^2 per day. Between jointing and booting, it was 48,300 to 68,600 cm^2 per day. Between booting and lashu [5198 3578], it was 74,800 to 127,600 m^2 per day. The net photosynthesis production rate was maximum between the height of tillering and the booting stage. Every day, every square meter of leaf area synthesized between 3.61 and 5.45 grams of dry material. Between transplantation and the height of tillering, it was around 1.60 to 2.96 grams; and between booting and lashu it was mostly at 3.0 to 3.5 grams. The proportion of dry material synthesized between the time of full heading and full ripening fluctuated between 58.2 and 87.3 percent of the composition of output (Table 5). In general, the larger this proportion, the smaller the economic coefficient, and the smaller the amount of transfer to the grains of the material stored in the stems and the sheaths before full heading; however, the toughness of the stems and branches was stronger and the resistance to lodging greater. For example, prior to full heading, the material stored in the stems and sheaths of Jinong amounted to 13.6 percent of the composition of the output. When the amount of transferred material was small, the dry weight per unit of length of the first, second, and third segments was mostly in the first or second, and though the plants were tall, their lodging resistance was very strong. But the economic coefficient was only .45, and per mu yields were only 801.4 jin, 16.2 percent less output than for the control Nonghu No 6. By contrast, prior to completion of heading, the quantity

Table 5. Late Rice Varieties Material Production Situation

项 (1)	目	沪选19 (2)	7657	109	751	蒙杂3号 (3)	加农45 (4)	6366	农虎6号 (5)	汇稻713 (6)	6507	加农762 (7)	纪农 (8)
(9) 叶面积系数	8/4(月/日) (10)	1.35	2.27	1.82	1.80	0.42	1.87	1.87	1.60	1.85	1.57	1.59	1.63
	8/24	2.1	3.2	2.1	2.3	2.3	2.0	2.0	2.7	2.1	2.4	2.3	2.1
	9/14	5.7	4.4	6.3	6.30	4.6	4.8	5.5	5.2	5.3	7.4	4.6	6.0
	10/17	4.1	4.6	4.6	3.6	2.0	2.0	4.2	3.6	4.4	4.2	3.6	3.6
净光合生产率 (11) (克/m²·天)	8/4—24	2.91	1.60	2.48	1.96	4.10	2.02	1.72	3.32	1.56	2.20	0.84	2.96
	8/24—9/14	4.56	3.61	5.45	4.72	5.61	5.69	5.06	3.88	3.49	4.18	5.31	4.85
	9/14—10/17	3.04	4.27	3.53	3.16	3.07	2.25	3.04	3.19	5.05	2.52	3.06	2.96
(12) 齐穗后光合产物在产量中占%		67.7	75.6	59.0	87.3	/	67.5	64.4	68.0	75.8	62.3	58.5	86.4
(13) 经济系数		0.51	0.46	0.50	0.31	0.39	0.46	0.52	0.52	0.48	0.53	0.54	0.45

Key:
1. Item
2. Huxuan 19
3. Liza 23
4. Jianong 15
5. Nonghu No 6
6. Huigeng 713
7. Jianong 762
8. Jinong
9. Leaf surface coefficient
10. Month/day
11. Net photosynthetic production rate (grams/m^2 day)
12. Percentage of output of photosynthetically produced material following full heading

of material stored in the stems and sheaths of Huxuan 19 amounted to 32.3 percent of the composition of the output. The economic coefficient was 0.51, and the amount of transferred material greater. The dry weight per unit of length of the first, second, and third bottom segments was very low, the degree of dryness being in descending order. Plant heights were lower than those of Jinong by 9 centimeters, and the plants were very prone to lodging. In the case of low stem type 6366, however, though the amount of material stored in the stems and sheaths prior to full heading that was transferred was fairly great, amounting to 35.6 percent of the composition of output, the economic coefficient amounted to 0.52, and the toughness of segments was poor, the short stems were not prone to lodging, and output stood first among that of medium maturing series for a 19.9 percent increase over the control Jianong 15. Short-stem type varieties possess the characteristics of having a quite high economic coefficient while not being prone to lodging. In breeding work, emphasis on short stems is economically worthwhile.

(4) Composition of output. The vegetative growth period of late rice is short, so principal reliance must be placed on the number of panicles in order to get higher yields. Of the materials included in this year's experiments with late rice, the number of effective panicles per mu was more than 250,000 (the hybrid rice aside), and for most of the material the number was greater than 300,000. The total number of grains per

panicle was between 50 and 70 or more in most cases, and the per 1000 weight of grains was more than 25 to 26 grams in most cases. The early maturing control, Huxuan 19, had per mu yields of 830.0 jin, and 76057 had per mu yields of 961.1 jin, a 19.9 percent increased yield over the control. The late maturing control, Nonghu No 6, had per mu yields of 956.6 jin; and Hunanwan had per mu yields of 996.8 jin, a 4.2 percent increase over the control.

Conclusions

Late rice grown in the Shanghai environs is much affected by fluctuations in temperature. Meteorological data for the period 1873-1972 shows that beginning on 16 September, bouts with low temperatures begin. Prior to 20 September the damage rate from low temperatures for fully headed late rice is 16 percent. The rate is 27 percent for rice fully headed before 23 September. During the 1970's the rate was 30 percent, and before 23 September, it was 50 percent. The frequency of damage had increased strikingly. Consequently, in the process of breeding late rice varieties, the danger of low temperatures is a major factor requiring consideration. The results of this year's experiments show that 6366 has numerous effective panicles, a rather high economic coefficient, short stems, is not prone to lodging, has fairly high output, and is fairly tolerant of low temperatures. Its shortcoming is small panicles and a slow rate of growth of leaf area. During booting, 76057 showed vigorous photosynthesis, rapid coming into milk, and its growth stage was short, which is helpful in avoiding low temperature damage. Its shortcomings are lack of tolerance for fertilizer and proneness to drop its grain. However, following completion of heading, its resistance to lodging is better than that of Huxuan 19. Given moderate levels of fertilizer, output is rather high, and consistent yields may be obtained when it is used as the final rice crop. The late maturing Hunanwan, despite no strikingly increased output over the control, stood first in output among the 14 materials used in the test. Total number of grains per mu were highest, but it has the shortcoming of a long growth period. Whether or not it would produce high yields as a single crop late maturing variety awaits further test plantings.

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EFFECT OF CLIMATE ON YIELDS OF LATE CROP RICE ANALYZED

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 4, 5 Aug 80 pp 7-9

[Article by Gao Shixiu [7559 1102 4423], Agricultural Meteorology Office, Shanghai Municipal Meteorology Institute: "Analysis of Agri-Cultural Climatic Conditions Affecting High Yields of Late Crop Rice"]

[Text] 1. Quantitative Agricultural Climate Indicators Affecting High Yields

There are numerous factors that cause unpredictability in the output of the late rice crop in the Shanghai area. A look at the structure of output from the late rice crop during the past several years shows great variability in the number of effective panicles, the number of mature grains, and the per thousand weight of grains, and year to year differences have been fairly great. For example, the difference between 1974, the year of the greatest number of effective panicles, and 1977, the year when they were fewest, was 81,400 per mu. The difference per panicle in the number of mature grains was 9.07, and the difference in per thousand weight of grains was 2.21 grams. The reason for these differences is related to the weather conditions for different growing seasons for the late rice crop. For example, the main reason for the reduced output in 1974 was a high rate of empty husks, meaning a reduced number of mature grains per panicle. The reason was that during the meiosis stage (16 September), low temperatures occurred (the lowest being 15.1°C); in 1975, the main reason for reduced output was a low per thousand grain weight, the result of high temperature and a large amount of rain during the period of booting and flowering, which brought on damage from diseases and insect pests as well as lodging during the late stage. In 1977, the main reason for reduced output was a lesser number of effective panicles, the result of continuous low temperatures following transplanting, poor tillering, and noticeably reduced numbers of tillers. The crucial period of growth when unfavorable climatic conditions can impair high output of late rice is mostly in the early stage, from booting to being in the milk. Cold damage can result from low temperatures, or high temperatures and high moisture may occasion insect damage. Low temperatures and high moisture may occasion disease damage. Second in

importance is protracted low temperatures during the tillering stage. Agricultural meteorological experiments conducted since 1973 show that there are two periods when late rice can suffer cold damage from low temperatures. One is during the meiosis stage of the pollen mother cell. It is exceptionally sensitive to temperature at this time, and if temperatures as low as 15°C are encountered, the pollen will either stop development or its development will be impaired to the extent of losing its ability to germinate, and thus husks devoid of grain will be formed. The second period is during the panicle formation and flowering stage. For low temperature indicators causing cold damage, see Table 1. When any one of the conditions listed pertains, the cold damage will be most noticeable. The lower the temperature and the longer the low temperature continues, the more serious the damage.

Table 1. Low Temperature Indicators for Cold Damage During the Flowering Stage for Late Rice

No.	Average Temperature	Continuous Number of days	Maximum Temperature	Continuous Number of Days
1	19.5 - 20.4°C	3 days or more	less than 23.4°C	3 days or more
2	18.5 - 19.4°C	3 days or more	less than 23.4°C	2 days
3	below 18.4°C	3 days or more		

In order to more fully understand the quantitative agricultural climatic indicators affecting high yields of late rice, we used per mu yields in Shanghai over the years to analyze the relationship between various climatic conditions and output during various stages of growth. From this effort was derived the preliminary quantitative indicators for agricultural climate at crucial growth stages that results in reduced yields of late rice over large areas. (See Table 2) Using the climatic conditions over the years during the principal growth stages of late rice, matching them with the quantitative indicators of damage shown in Table 2, the annual extent of impairment of the late rice by unfavorable climatic conditions may be determined. From the size of the overall annual climatic impairment index can be determined how good the harvest was. The higher the percentage of the overall impairment index, the more serious the degree of impairment that year from unfavorable climatic conditions, and the lower the output. Conversely, the smaller the percentage, the less the extent of impairment from unfavorable climate indicated and the higher the output. In Figure 1, the percentage of rise and fall over the years in per mu yields and overall climatic impairment is virtually the same. This shows that the quantitative agricultural climate indicators causing damage during critical stages of growth, as presented in Table 2, are the principal unfavorable climatic factors impairing high yields from late rice in Shanghai (Figure 1).

Table 2. Agricultural Climate Impairment Indicators for Late Rice

(1) 生育期	(2) 气候条件	(3) 农业气候受害指标		(4) 影响指数(%)
(5) 播种	(6) 播期多暴雨	6月下旬至7月上旬总雨量大于200毫米。(7)		5
秧苗期	(8) 苗期温度低	7月平均气温低于26.0℃(比常年低1.5℃)(9)		5
(10) 移栽发棵期	(11) 持续低温	8月中、下旬平均气温(12)	≤25.5℃	10
			25.6～27.0℃	5
(13) 减数分裂期	(14) 低温冷害	9月中旬最低气温≤15.4℃(15)(一天)		10
(16) 抽穗开花期	(17) 秋季低温冷害指标(见表1)	低温开始期出现在9月23日或以前(18)	大部县有低温(19)	20
			局部县有低温(20)	10
		低温开始期出现在9月24日至26日(21)	大部县有低温(22)	15
			局部县有低温(23)	7
		低温始期9月27日至10月1日，同时上年11月中旬至5月下旬>3℃积温小于1360℃(24)	大部县有低温(25)	10
			局部县有低温(26)	5
(27) 开花到灌浆前期	(28) 高温高湿或低温高湿	9月下旬至10月上旬总雨量大于100毫米(29)	10月上旬平均气温大于22℃(30)	20
			10月上旬平均气温小于22℃(31)	10
		9月下旬至10月上旬总雨量50～1000毫米(32)		5

Key:

1. Growth stage
2. Climatic conditions
3. Agricultural climate impairment indicators
4. Impairment Index (percent)
5. Sowing of seeds and sprouting period
6. Many heavy rains at time of sowing of seeds
7. Total rainfall between last 10 days of June and first 10 days of July was more than 200 mm
8. Low temperatures during sprouting period
9. Average temperatures during July were below 26.0°C (lower than 1.5°C than most years)
10. Transplanting and tillering years
11. Continuous low temperatures
12. Average temperatures during mid-August and last 10 days of August
13. Meiosis stage
14. Cold damage from low temperatures
15. Lowest temperature during middle of September ≤ 15.4°C (1 day)
16. Panicle formation and flowering stage
17. Autumn cold damage from low temperatures indicators (see Table 1)
18. Onset of low temperatures occurs prior to 23 September
19. Most counties experience low temperatures
20. Some counties experience low temperatures
21. Onset of low temperatures occurs before 24 and 26 September
22. Most counties experience low temperatures
23. Some counties experience low temperatures
24. Beginning of low temperature period 27 September to 1 October. Additionally, from November of the previous year to last 10 days of May > 3°C Accumulated temperature less than 1360°C
25. Most counties experience low temperatures
26. Some counties experience low temperatures

[key continued next page]

[Key to Table 2 - continued]

27. From flowering to in-the-milk period
28. High temperatures and high humidity or low temperature and high humidity
29. Total rainfall greater than 100 mm between first 10 days of September and last 10 days of October.
30. Average temperatures during first 10 days of October greater than 22°C
31. Average temperatures during first 10 days of October less than 22°C
32. Total rainfall between first 10 days in September and last 10 days in October 50 - 1000 mm.

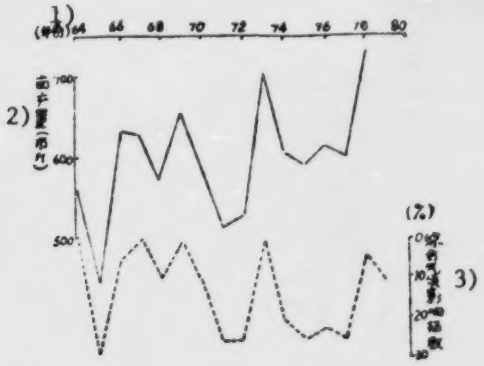

Figure 1. Correlation between per mu output and overall climate impairment index for late rice

Key: Year
1. Year
2. Per mu yields (shijin)
3. (percent) Overall climatic impairment index

2. Agricultural Climatic Conditions During the Growth Period for Late Rice in 1979

Accumulated temperatures during 1979 tended to be low. Between July and October, effective accumulated temperatures amounted to 1742°C for days over 10°C. Total number of hours of sunlight were 861. Total rainfall was 259 millimeters. Accumulated temperatures were 29°C less than the annual average; sunshine was 58 hours more than the annual average, and rainfall was 224 millimeters less than in average years. As compared with the same period in 1978, accumulated temperatures were lower by 114°C; sunlight was 67 hours less; and rainfall was 56 millimeters more. Overall, agricultural climatic conditions were not as favorable as during 1978.

(1) Sowing of seeds and sprouting occurred during the rainy season when there was less sunshine. Between the last 10 days of June and the first 10 days of July, there were only 37 hours of sunshine, 69 hours less than the annual average for the same period, and less than any year since Liberation. In midsummer, the weather was clear and hot. Between the first 10 days in July and the first 10 days in August, effective accumulated temperatures for days above 10°C amounted to 583°C, higher by 32°C and 8°C respectively as compared with the annual average and with the same period in 1978. Sunshine totaled 281 hours, 30 hours and 25 hours more respectively than the annual average and the 1978 average for the same period. Weather conditions during the sprouting stage were quite favorable.

(2) After the seedlings were transplanted they were damaged by two typhoons and cold air. During the last 10 days of August and the first 10 days of September, temperatures averaged 25.8°C and 23.2°C respectively, lower by 1-2°C than the annual average, and lower by 3-4°C than for the same period in 1978. There were numerous overcast and rainy days during this period, with low temperatures that impaired tillering. The zenith of tillering was delayed. Added to this was the late arrival of the "Autumn Equinox," and the effects of cold air drove temperatures down quickly in parts of this city. On 24 September began 3 continuous days when average temperatures fell to around 19°C, of which maximum temperatures for 2 days in a row fell below 23°C. Some fields suffered cold damage, with the result that the empty husk rate was higher than in 1978.

(3) During the flowering and in the milk stage, the weather was continously fine with little rain. Sunlight was sufficient, but daily temperatures were off. During the first 10 days of October, temperatures averaged 11.6°C. While temperatures were low, the climate was also dry and the in-the-milk stage advanced slowly. During the first 10 days of October, for instance, the lowest temperature averaged 2.5°C less than for the same period in average years. The average relative humidity for each 10-day period was 13 percent less than for the same period in average years. A check conducted on 18 October showed the per 1000 weight of grains to be only 16.38 grams, with an annual daily increase in weight of 0.67 grams.

3. Predicting Output on the Basis of Agricultural Climatic Conditions

The three basic factors making for agricultural crop output were used to make quantitative calculations. One was consideration of the annual average per mu output resulting from the local natural conditions, the economic foundation, levels of fertilizer and technical conditions. Second was an analysis of reforms to the system of cultivation, and improvements in varieties, and scientific farming for average annual increases in production commensurate with speed of development of productivity. Third was analysis of the extent of impairment to output caused

by the multiple unfavorable climatic conditions. As a basis for statistical analysis, the following formula was used: $D = \overline{Y} - \overline{YX} + Z$. In the formula D stands for theoretical per mu output; Y stands for average per mu output in an average year; and Z stands for increased value in an average year. X is the overall climatic impairment index. Statistics show that between 1964 and 1978, average per mu output for late rice was 597 jin. During this 15-year period, the increased value of per mu yields of late rice was 172 jin, and the 1979 overall impairment index was 12 percent; therefore, the theoretical per mu yield for late rice in 1979 will be 597 - (597 x 0.12) + 172 = 697 jin. It is estimated that yields will be about 35 jin less than for 1978. A comparison of theoretical and actual per mu yields of late rice over the years shows a virtual identical trend for the two. (See Figure 2) The discrepancy was ± 20 jin for 80 percent of the years, and ± 10 jin for 60 percent of the years for a good correlation.

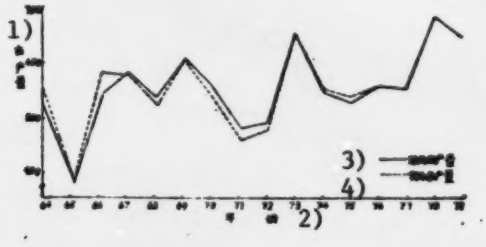

Figure 2. Showing correlation between theoretical and actual output for late rice

Key:
1. Per mu yields
2. Year
3. Theoretical per mu yields
4. Actual per mu yields

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BRIEFS

TRAINING OF RURAL CADRES--Since the holding of the Third Plenary Session of the current party Central Committee, enrollment of rural cadres in Sichuan in various types of training classes to study rural economic management and agricultural technology has exceeded 1.2 million. Last year such classes were established in 14 counties, and the first 3,400 graduates were production brigade party branch secretaries and brigade leaders. This year 40 counties have set up such classes to train some 10,000 cadres. According to a decision made by the provincial party committee, short-term technical classes will also be set up to train cadres above the level of work-team leaders. [Chengdu SICHUAN RIBAO in Chinese 17 Aug 80 p 1]

CROP PROTECTION STRENGTHENED--By the end of July, 95 communes in Wenjiang Prefecture of Sichuan had set up plant protection stations or companies to control harmful insects. These stations or companies have 9,830 plant protection workers, who are also commune members, and more than 3,000 mechanized insecticide sprayers ("East is Red, model 18"), operated by some 6,000 trained operators. Thus far they have sprayed more than 2.7 million mu of paddy fields. [Chengdu SICHUAN RIBAO in Chinese 18 Aug 80 p 1]

RATOONING RICE--In the past 3 years, a production brigade in Hechuan County of Sichuan had been experimenting with ratooning hybrid rice plants. After summing up experience, it has recently decided to keep more such plants on 67 percent of its hybrid rice fields and strive for higher per-mu yield through better field management to encourage the growth of new shoots from the old roots. Plans for keeping ratooning plants on 340 mu of hybrid rice have already been made. [Chengdu SICHUAN RIBAO in Chinese 14 Aug 80 p 2]

WATER CONSERVANCY PROJECTS--Construction of a large number of water conservancy projects has helped increase the irrigated area in Sichuan from some 8 million mu before liberation to more than 44 million mu at the present. The management and utilization of these projects also have improved, and the potential for further improvements is still very great. Last year, the total volume of water stored in these projects throughout the province exceeded 8.6 billion cubic meters, or was nearly twice that of the previous year. As a result, the province is able to expand its paddy rice area by more than 1.6 million mu this year. Income from these projects and the ability of these projects to meet management expenditures have also improved over those of last year. [Chengdu SICHUAN RIBAO in Chinese 14 Aug 80 p 1]

RURAL ENERGY INCREASED—According to statistics, 205 small newly built hydroelectric stations were commissioned in rural areas of Sichuan during the first half of this year. These stations are equipped with a total of 286 power generating units with a total capacity exceeding 51,000 kilowatts, an increase of 89.9 percent over that installed in the same period of last year. The annual plan for the current year calls for the construction of new stations with a total capacity of 100,000 kilowatts. Additional stations now under construction are capable of generating 70,000 kilowatts, and, therefore, this year's annual plan will be overfulfilled. Moreover, 2,390.8 kilometers of high-tension powerlines were installed during the first half of this year. [Chengdu SICHUAN RIBAO in Chinese 22 Aug 80 p 1]

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MEASURES TO ENRICH RURAL AREAS ADOPTED

Beijing RENMIN RIBAO in Chinese 10 Aug 80 p 1

[Article by XINHUASHE correspondent Wang Qinghai [3769 7230 3189]: "Make the Most of Special Local Advantages Permitting All Nationalities in Yunnan To Prosper With All Possible Speed."]

[Text] Following investigation and study, the Yunnan Provincial Party Committee recently decided to continue the emancipation of thinking, to liberalize policies, to make the most of the special economic advantages of the province, and to enliven the economy so as to fully arouse the enthusiasm of cadres and the masses to make all nationalities in the province prosperous within the shortest possible time.

1. Readjust policies regulating state purchases of grain, in order to reduce the burden on the masses. During 1979, state grain procurement quotas were reduced throughout the province, and some poor brigades either had their farm taxes reduced or were exempted from payment. This move substantially solved the problem of excessive burdens. The basic figure for state purchases of grain that resulted from this readjustment has been guaranteed to remain unchanged for the next 4 years. In addition, a continued readjustment of state procurement quotas will be made for a minority of production teams.

2. Establish and perfect totally flexible and varied systems of responsibility for production. While adhering to socialist collective ownership and distribution according to work, whatever methods are best able to arouse the enthusiasm of the masses and are most beneficial to the development of production should be adopted.

In border areas and in high, cold, impoverished mountain areas, where dwellings are dispersed, the population occuping vast lands is sparse, the economy is backward, and life is poor, a system whereby contracts may be instituted with individual households with or without raising the acreage issue.

3. Develop mountain regions and development of the forestry industry, and institute rights of ownership in mountain forests. In collectively owned forests where there are few or no production teams, a portion of the mountain wilds may be designated as state-owned forests and turned over to brigades for operation, and once the forestry rights have been so designated, a formal license will be issued. Destruction of forests and the opening up of wastelands shall be forbidden.

Adopt active measures for a satisfactory solution of the fuel problem. Reasonable cutting of timber can be permitted, provided the ecological balance is maintained.

4. Vigorously support the development of economic and cultural endeavors of minority nationalities in order to bring about a rapid transfomration of impoverished and backward border nationalities areas.

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BRIEFS

AGRICULTURAL FIGURES--Dry land accounts for two-thirds of the total arable land in Yunnan, but output from this land makes up less than one-half of the total grain output. Of the more than 20 million mu of dry land, red soil accounts for more than 15 million mu. At present grain yields per mu of dry land in mountainous areas are from 300 to 400 jin. Now in Yunnan there are 15 million mu of ricefields of which approximately 10 million mu have guaranteed irrigation. At present the sown wheat area in Yunnan is nearly 10 million mu, with an average yield of less than 200 jin. Nearly 5 million mu of wheat is irrigated. [Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 25 May 80 p 2]

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BRIEFS

ORGANO-PHOSPHATE PESTICIDES--In Zhejiang, the commonly used organo-phosphate pesticides include DDVP, Trichlorophon and Dimethoate. These pesticides are effective against insects and disease, but they are also highly toxic to humans and animals, and if they are not used in a safe way, they can cause poisoning. [Hangzhou ZHEJIANG RIBAO in Chinese 8 Sep 80 p 3]

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TITLE: "The Application of the Principle of Hard and Soft Acids and Bases to the Chemistry of Phosphoric Esters"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 1-12

TEXT OF ENGLISH ABSTRACT: According to Pearson's concept, there are two broad categories of both acids (Lewis) and bases (Lewis) which can be termed hard and soft. The present paper shows how this concept can be applied satisfactorily to the chemical reactivity of kinds of bonds, and to the selectivity of certain groups of phosphoric esters, especially in the case of thiophosphoric esters. The explanation and discussion dealing with the alkylation of thiourea, the catalyzed isomerization of thiophosphoric esters and the anormalous reaction of benzyl alcohol with phosphorus pentasulfide are made on the HSAB terms. A postulated mechanism of the catalytic role of tertiary amine in the preparation of diethyldithiophosphoric ester and some critical comments on the reaction of

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 1, Apr 80 pp 1-12]

phosphoryl halide with dialkyldithiophosphoric ester are given in the light of the same principle. This is the first discussion of the above-mentioned and some other data.

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TITLE: "Studies on Zearalenone"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 13-28

TEXT OF ENGLISH ABSTRACT: A uterotrophic substance was extracted in crystalline form from the culture of Fusarium roseum 'graminearum' strain BAU-z8, which was isolated from infected grains of corn harvested in the western suburb of Beijing. According to its melting point, ultraviolet and infrared spectra and other properties, it was identified as Zearalenone. About 1.4 grams of zearalenone was extracted from a culture of BAU-z8 growing on a medium made from 1 kg

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of rice. The conditions for biosynthesis of zearalenone and the method of extraction and purification as well as its biological activity are described in this paper.

The experimental data showed that zearalenone stimulated the growth of the uterus of the white mouse and the growth of the Beijing duck significantly. The average uterine weight of young female mice treated with zearalenone by subcutaneous injection increased four-five fold in four days as compared with the control. The average body weight of Beijing ducks fed with crystalline zearalenone, at the beginning of forced feeding, in gelatin capsules at a rate of 0.7 mg/day, was about 16.5 percent ($P < 0.01$) heavier than that of the control in 10 days.

It is interesting to note that a zearalenone-like substance was also found in the growing points of vernalized winter wheat seedlings. This substance has the same R_f value and fluorescence as that of the zearalenone on a silica gel thin layer chromatogram. However, the winter wheat treated by soaking seeds in a solution of zearalenone, 100 ppm dissolved in 0.5 percent sodium bicarbonate aqueous solution for about two days at room temperature, did not ear when it was planted in either a greenhouse or in the field at normal temperatures under long

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 1, Apr 80 pp 13-28]

day conditions, though the growing points had developed into double ridges (spikelet primordia). On the other hand, the spring wheat ('Potam' Mexican variety) treated with the same concentration of zearalenone eared about five days earlier than did the control. Further investigations on the effectiveness of zearalenone on the growth and development of wheat are still in progress.

AUTHOR: WU Zhongxian [0702 0112 6343]

ORG: None

TITLE: "Estimation of Genetic Value on the Basis of Various Combinations of Pedigree, Sibs and Progeny for Sex-Limited Quantitative Characteristics"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 29-35

TEXT OF ENGLISH ABSTRACT: This paper is an extension of the work summarized in the author's book "Statistical Genetics." In that book were collected all the formulae on the estimation of genetic value for two generations of pedigree; one generation of pedigree and full and half sibs, paternal and maternal; and sibs and progeny without values for parents or grandparents. Since for sex-limited quantitative characteristics, e.g., milk or egg production, only two grandparents and one parent provide any data, and these plus full and half sibs and progeny total only six variables, it is considered worthwhile to work out the formulae required for different combinations of these relatives to facilitate the estimation of genetic value for use as an index for the selection of sires. Due to considerations of space, formulae for more than four variables are not presented since it has recently been discovered that by an appropriate

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 1, Apr 80 pp 29-35]

transformation the formulae could be derived by a method which reduces the labor 20-30-fold, the procedure to be published in a forthcoming paper.

AUTHOR: XU Xudan [6079 2485 2481]
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ORG: Both of the Physiological Laboratory, Beijing Agricultural University and Henan Research Institute of Biology

TITLE: "Presence of Roots--A Prerequisite for Normal Function of Stomata on Sweet Potato Leaves"*

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 37-45

TEXT OF ENGLISH ABSTRACT: A single leaf or a stem segment bearing a leaf was detached from the sweet potato plant (Ipomoea batatas) and its lower end immersed in distilled water. The transpiration rate (grams of water lost/hr/dm sq) of the detached leaf was measured at regular intervals on successive days. On the first day it was, in general, slightly higher than that of the leaf on the intact plant. Two days later the rate rapidly declined to one-tenth of the original and was maintained at that low level for several consecutive days. Porometer and stomatal aperture measurements revealed that the decline was primarily due to the closure of stomata on the leaf. The decline could not be attributed to the abolition of root pressure or to physical obstructions at the cut end caused by local secretion or bacterial infection.

As adventitious roots began to establish themselves on the stem or petiole, the transpiration rose accordingly toward its original level. At the same time, stomata resumed their normal function. If the newly formed roots were cut off, the stomata closed again and transpiration rapidly declined. An increase in transpiration was not the result of reinforcement of water absorption by newly formed roots, for the same rise persisted even if the roots were suspended in moist air and were incapable of absorbing water directly.

When kinetin, auxin or giberellin were applied separately to the leaves which had been detached three days before with their transpiration having already fallen to a low level, none of the three hormones had any favorable effect on leaf transpiration.

A plausible explanation of the experimental results is that the root system of the sweet potato is capable of supplying the leaf with some physiologically-active substance which is a prerequisite for normal function of the stomata. This substance can be stored temporarily in the leaf as well as in the stem as is evidenced by the fact that the longer the stem segment attached to the leaf, the slower the decline in leaf transpiration.

Though kinetin has been especially known for its enhancing effect on the stomatal

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 1, Apr 80 pp 37-45]

opening, it is ineffective, when applied alone, in restoring the normal function of the stomata on detached leaves of the sweet potato. Classification of the chemical constitution of the substance concerned requires further investigation.

* Most of the experimental results were obtained in the years 1964-1966, and supplementary studies on plant hormone effects were carried out in 1979.

AUTHOR: ZHENG Piyao [6774 0012 1031]

ORG: None

TITLE: "On the Biological Characteristics of Summer Corn Cultivar 'Beijing Yellow 113'"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 47-56

TEXT OF ENGLISH ABSTRACT: This paper deals with some biological characteristics of the summer corn cultivar "Beijing yellow 113" grown in Beijing during the year 1975. The growing duration of this hybrid corn is about 90 days from seeding to maturity, with a total leaf number of about 16 in most cases. Its development proceeds at a moderate rate and does not show maturity in the middle of September when the atmospheric low temperature drops below 15°C. The leaf blade on the node where the ear emergence is the longest is also the leaf of maximum size. The longest leaf sheath is on the lower leaf, emerging from the node to which the ear is attached. Just below the tassel the internode is the longest. During the ontogenesis, eight layers of root emerge; those successively emerging have a total of 60 roots. Most penetrate deeply into the soil and the aerial root system is confined to one layer only. Concerning the function of the leaves, this hybrid corn often leaves eight green leaves before

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 1, Apr 80 pp 47-56]

being harvested. These are mainly leaves above the ear and a few just below it. It differs slightly from spring corn in that the grain filling of summer corn continues until harvest, the dry weight accumulating accordingly.

For cultural practice, the leaves may be divided into three groups which relate to the growth and development of the root, stem plus leaves, ear and tassel, and grain. Emphasis is given to the control of the distribution of the assimilation at different stages and some morphological parameters are given so as to make growth of different organs harmonize for obtaining maximum yield.

AUTHOR: MI Jingjiu [4717 2529 0046]
CHEN Dexin [7115 1795 9515]
LIANG Qiyao [2733 0796 1031]

ORG: None

TITLE: "The Effect of Different Pollination Methods and Parent Combinations on the Hybridization between Winter Wheat and Rye"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 57-68

TEXT OF ENGLISH ABSTRACT: 1. When wheat varieties were crossed with rye, three methods were used: pollination without emasculation, pollination after emasculation without bagging and ordinary pollination with emasculation. When the first two methods were used, those wheat varieties easily crossed with rye could obtain a high percentage of hybrid seed. It was easy to dintinguish the true hybrid seed from the false one according to the kernel type and kernel color. Hence, the method of pollination without emasculation is valuable for use in hybridization between wheat and rye.
2. When the method of pollination without emasculation was used, those wheat varieties not easily crossed with rye produced a large proportion of false hybrid seed. A small amount of true hybrid seed, however, could be obtained

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 1, Apr 80 pp 57-68]

through this method.
3. The germination potential and germination percentage of the hybrid seed of triticale F_0 was prominantly lower than that of its parents.
4. When routine pollination after emasculation was practiced, all wheat varieties easily crossed with rye possessed high germination potential and germination percentage in their F_0 hybrid. Therefore, the percentage of seed setting was parallel with germination potential and germination percentage.
5. The method of pollination after emasculation without bagging, and especially the method of pollination without emasculation, conspicuously increased the germination potential and germination percentage of the normal and shrunken hybrid seeds. This was especially true for those combinations possessing low germination potential and germination percentage. This, in turn, depended to a large extent upon the greatly reduced percentage of ungerminated seeds.
6. The method of pollination without emasculation was compared to the routine method of pollination after emasculation and there was no significant difference between the two in respect to natural seed setting percentage and seed plumpness of F_1.
7. During the germination of F_0 seeds, the phenomenon of abnormal germination was a common occurrence, but the percentage of abnormality was not high, and some of the abnormal seedlings were viable.

AUTHOR: ZHOU Changjiu [0719 7022 0036]

ORG: None

TITLE: "A Preliminary Study on the Isozymes of Several Species of Cruciferae"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 69-74

TEXT OF ENGLISH ABSTRACT: Peroxidase and esterase isozymic patterns revealed by polyacrylamide gel electrophoresis were studied in some varieties of cabbage (Brassica pekinensis Rupr.), Indian mustard (Brassica juncea Coss.) and radish (Raphanus sativus L.). Although some common characteristics were observed in the enzymograms of the three species investigated, more similarities in isozymic patterns for each of the enzymes studied were revealed within the same genus (between cabbage and Indian mustard) and especially within the same species (among different varieties of radish).

Five to nine bands of esterase were observed in each of the seven varieties of radish. The zymograms of these varieties were tentatively classified into four types.

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et al

ORG: None

TITLE: "Chemical Thinning of Apples: The Thinning Effect of Sevin and Naphthalene Acetic Acid (NAA) of 'Golden Delicious' and 'Ralls'"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 75-82

TEXT OF ENGLISH ABSTRACT: In 1978, sevin, NAA and mixed sprays of these two fruit thinners were tested for their effectiveness in thinning excess fruits of "Golden Delicious" and "Ralls," which are two of the most commonly grown apple cultivars in the apple regions of China. Previous experiments carried out in 1976 and 1977 indicated that 1000 ppm sevin and 30 ppm NAA applied two weeks after full bloom gave satisfactory thinning to "Golden Delicious" and "Jonathan," but were ineffective with "Ralls."

The results obtained in the 1978 experiments showed that sevin at the rate of 2000 ppm and NAA at the rates of 10, 20 and 40 ppm all significantly thinned

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 1, Apr 80 pp 75-82]

"Golden Delicious," the degree of thinning being approximately the same as conventional hand thinning. Mixed sprays of 10 ppm NAA plus 1000 ppm sevin, though lower in concentration than when these two chemicals were applied separately, also resulted in satisfactory thinning of "Golden Delicious." However, with "Ralls," sevin and NAA applied either separately or mixed failed to thin. The surfactant "6501" was added to all spray solutions and the trees were sprayed two weeks after full bloom in all treatments.

The thinning effect of sevin was evident one week after spraying, while that of NAA did not show clearly until the third week after spraying. Fruit size and weight of "Golden Delicious" were enhanced in all the treatments with these two fruit thinners. Yield per tree in 1978 and 1979 (not chemically thinned) showed that biennial bearing was markedly ameliorated.

NAA at the rate of 40 ppm produced a temporary inhibiting effect on the growth of young fruits. Except for this, no phytotoxic effects were observed.

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WANG Shu [3769 2885]

ORG: GUAN of the Plant Protection Department, Beijing Agricultural University; WANG of the Science and Technology Office, Tianjin Agriculture and Forestry Bureau

TITLE: "The Influence of Aphid Saliva on the Infectivity of TpMV on Chinese Cabbage"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 83-85

TEXT OF ENGLISH ABSTRACT: The present study was carried out in Beijing in 1965. The turnip aphid, Lipaphis erysimi, and peach aphid, Myzus persicae, were used for their head-thorax complex which carried the salivary glands, and these were homologized with Chinese cabbage leaves infected with TpMV. A non-aphid sample was used as the control. The homologized juices were picked up and inoculated by puncturing needles to healthy seedlings of Chinese cabbage. The results indicated that saliva from both aphid species promoted the infectivity of TpMV instead of inhibiting it, and the efficiencies shown were more significant in turnip aphids than in peach aphids. The conclusive results are discussed.

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et al

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TITLE: "The Effects of Laser-Acupuncture Stimulus on the Threshold of Pain in Animals"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 1, Apr 80 pp 103-108

TEXT OF ENGLISH ABSTRACT: 1. The laser-acupuncture stimulus may increase the threshold of pain significantly in rabbits, pigs, sheep and rats, so that certain evidence may be provided for its clinical application.
2. Naloxone has an antagonistic action on the increasing of the threshold of pain in rabbits and rats caused by laser-acupuncture stimulus.

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TITLE: "Studies on the Nitrogen Fixation by Free-Living Rhizobium sp. Cowpea Strains 1003 and 32HI"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 1-9

TEXT OF ENGLISH ABSTRACT: 1. A simple method for detecting nitrogenase activity of free-living Rhizobium sp. cowpea strain 1003 on a modified yeast mannitol-agar (YMA) is herein described. In addition to the original compounds of YMA, the modified YMA medium contains 5 μM of Na_2MoO_4 $2H_2O$ and 0.4 mM of $(NH_4)_2SO_4$. The specific activity of nitrogenase of Rhizobium cowpea strain 1003 grown on this medium has been found to be about 50 n mol of C_2H_4 formed per hour per mg of protein. In this medium, mannitol can be replaced by arabinose, glucose or sodium gluconate. Sucrose, however, is not a good carbon source for growth and nitrogenase activity of strain 1003.
2. Different strains grown on different media exhibit different specific

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 2, Jul [?] 80 pp 1-9]

activities of nitrogenase. The specific activity of nitrogenase of strain 1003 grown on YMA medium (13.7) is much higher than of that grown on CS_7 medium (2.3). However, the specific activity of nitrogenase of strain 32HI grown on YMA is much lower (0.4) than of that grown on CS_7 (36.2).
3. CO_2 was found to exert a significant influence on the activity of nitrogenase. One to three percent CO_2 in the gas phase over the agar medium increased the specific activity of the enzyme to about 1.5 to 2.5 times as much as the case of CO_2-free control. The effect of CO_2 on nitrogenase activity may be due to the supply of organic carbon substrate (by CO_2 fixation) rather than by the changing of pH. Further investigation on the mechanism of the CO_2 effect on nitrogenase activity of free-living rhizobium is still in progress.

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ORG: None

TITLE: "Preliminary Observation on Ontogenic Processes and Several Characteristics Related to Agricultural Practices of Summer Maize Cultivar 'Nongda 54'"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 11-22

TEXT OF ENGLISH ABSTRACT: A systematic observation has been made since 1977 on the biology of summer maize cultivar "Nongda 54." Results obtained during 1977-1978 may be summarized as follows:
1. Under normal conditions, cultivar "Nongda 54" usually develops up to 16 leaves. Its ear comes out from the axil of the 11th leaf. One leaf above the cob and one leaf below it may be termed as "ear nourishing leaves" which are the larger leaves of the plant. Geometrically, smaller leaves are located at the lower and upper parts of the plant, while the larger ones are in the middle.
2. When fertilizer was once given during seeding, top-dressing showed little effect on plant size except on the number of root layers, root number and the length of the internodes. However, top-dressing played an important role in the development of reproductive organs and the functional activities.

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 2, Jul [?] 80 pp 11-22]

3. "Nongda 54" is a variety with both pubescent and glabrous leaves on the same plant. The first five leaves are glabrous and those above the sixth leaf are all pubescent. The sixth leaf is transitional. As the first five leaves are the embryonic leaves enclosed in the coleoptile, it might be termed as "the nourishing leaves at the juvenile stage."
4. In accordance with the functions played by them, the leaves may be divided into three groups, with the 11th leaf as the turning point. The first group (root nourishing leaves) consists of the leaves from the first one to the sixth, the function of which is to nourish the roots. The second group (cob nourishing leaves) consists of the leaves from the 6th to the 11th, which are responsible for supplying the assimilate to the cobs. The third group of leaves (seed nourishing leaves) are those located above the cob, determining the development of the seed.
5. The separate functions of the three groups of leaves had been verified in an experiment while leaf pruning was carefully done. Further investigations are underway.
6. Based on the biology of the cultivar "Nongda 54," recommendations of agrotechnique for obtaining high yield are made. It is pointed out that emphasis must be given to appropriate seeding date, timely top-dressing, irrigation and intertillage and soil mulching at the 6th and 11th leaf stage.

AUTHOR: MI Jingjiu [4717 2529 0046]
CHEN Dexin [7115 1795 9515]
ZHANG Shouyi [1728 1343 0001]

ORG: None

TITLE: "A Comparative Study of the Flowering Characteristics of Wheat, Rye and Triticale"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 23-30

TEXT OF ENGLISH ABSTRACT: 1. The duration between heading and flowering is 3-4 days for wheat, 9-12 days for rye and 6-7 days for triticale respectively.
2. The duration of the flowering of the whole spike is three to four days for wheat, four to five days for rye and three to six days for triticale respectively.
3. The most concentrated flowering period for wheat and rye is on the second day of flowering, totaling over a half for wheat, 40 percent for rye, while that for triticale is on the second to fourth day.
4. The average duration for the opening of glumes per floret is half an hour for wheat, one hour for rye and one hour for triticale.
5. Wheat and triticale may flower both at day and night, but rye does not flower

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at night.
6. The flowering of wheat, rye and triticale generally has two peaks around the clock: the first one is comparatively clear, usually from 8 to 10 am, while the second is less prominent, usually from 1600 to 1800 hours. Different varieties have different flowering peaks, their advance or delay, concentration or scattering being closely connected with temperature and humidity.
7. The mode of flowering of wheat varieties observed belongs to the open-type, and its sequence of flowering initiates from the first floret situated at the mid-upper spikelet, making a circle. The flowering of rye is of the open-type, its spikelets being in the mid-spike flower in tandem. The flowering of triticale is also of the open-type. At first its sequence of flowering follows the type of rye, then shifts to that of wheat.
8. A phenomenon known as "repeated flowering" was noted in triticale. All unfertilized florets possessing male sterility generally reopen for the second time following the normal flowering, with a duration of from one to eight days. If they are pollinated within five days during the repeated flowering, there is still a certain percentage of seed setting.

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ORG: None

TITLE: "Studies on the Characteristics of the Growth and Development in the Seedling Stage of Peanuts (Arachis hypogaea L.)"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 31-42

TEXT OF ENGLISH ABSTRACT: The characteristics of the growth and development of the peanut in the seedling stage were studied so as to throw light upon the relationship between these characteristics and those in the flowering and fruiting stages. The experiment was carried out with two varieties, namely Beijing-Dahuasheng peanut (common type, semi-erect, large-seeded) and Shandong-Fuhuasheng peanut (pearl-bean type, erect). The results obtained were as follows:

With the Beijing-Dahuasheng peanut, after the third leaf of the main stem expanded, the differentiation of the sepals of the flower-bud began. But with the Shandong-Fuhuasheng peanut this had already happened during the process from germination to emergence. At the beginning of the flowering stage, the number of leaves estended on the main stem was eight on the Beijing-Dahuasheng peanut, whereas on the Shandong-Fuhuasheng peant it was only seven. Several

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 2, Jul [?] 80 pp 31-42]

plantings were made in Beijing from 28 April to 1 September. The daily mean temperatures during this period were from 17.5°C to 25.9°C, and the day lengths were from 11 hours 21 minutes to 15 hours 1 minute. The above- enfloned behavior, however, remained unaltered with the changes of environmental conditions, such as temperature or day length. At the beginning of the flowering stage, the number of leaves extended was eight on the main stem, five on primary lateral branches, three on the secondary lateral branches, three on the tertiary lateral branches, and one on the quaternary lateral branches of the Beijing-Dahuasheng peanut, and the numbers were seven, four, two and two respectively in the absence of the quaternary lateral branches on the Shandong-Fuhuasheng peanut. This remained unaltered in spite of the changes of conditions.

At the beginning of the flowering stage, an average of 130 flower buds per plant on the Shandong-Fuhuasheng peanut and an average of 45 flower buds per plant on the Beijing-Dahuasheng peanut were observed. The total number of flowers was about 140 per plant. Thus, about 93.8 percent of the total number of flowers on the Shandong-Fuhuasheng peanut appeared before the beginning of the flowering stage, whereas only 28.1 percent appeared on the Beijing-Dahuasheng peanut.

The results obtained can be used as the basis for further research on the relationships between the growth and development in the seedling stage and those

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 2, Jul [?] 80 pp 31-42]

in the flowering stage, as well as on their influence on the yield. They can also be used as references for the cultural practices of seedlings.

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ORG: None

TITLE: "A Preliminary Evaluation of Climatic Regions for Grape Production in North China"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 43-51

TEXT OF ENGLISH ABSTRACT: The evaluation of climatic regions suitable for grape production is essential for China, especially during this present increase in the grape and wine industry. The author has attempted this work on the basis of experience and research in China and abroad. Climatic regions for grapes can be classified in o five types according to the local effective heat-unit summations. Each locality has been evaluated with reference to its total annual precipitation, average temperature in its warmest month, water-heat coefficients in the ripening season, and other features. A -14°C (mean of the absolute minimum temperatures experienced over a period of many years) isotherm is shown, representing the marginal boundary for vineyards existing without winter protection.

In light of the preliminary evaluation, table wine grape production would be

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suitable in the cool summer regions, and possibly in some areas in the moderately warm regions if the water-heat coefficients are low. For quality dessert wine grape production, there are fewer possibilities other than the southern parts of Xinjiang. Areas that are ideal for growing quality table wine grapes are unfortunately located where grapevines should be buried during the winter period. This problem could be partially overcome by breeding cold-hardy cultivars and improving some of the regular cultural techniques in practice at present.

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ORG: None

TITLE: "Chemical Thinning on 'Yali' Pear"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 53-59

TEXT OF ENGLISH ABSTRACT: This paper summarizes a four-year thinning trial conducted in the central part of Hebei Province on the effectiveness of NAA and Sevin on pear cultivar "Yali" (Tianjin Pear). NAA spray at 40 ppm applied at full bloom produced satisfactory thinning effects, causing a marked reduction in fruit set. NAA spray with supplemental hand-thinning to a proper degree achieved a good yield of high fruit quality as well as sufficient flower formation which ensured the next year's crop. Preliminary trials with Sevin sprays at the rates of 1000 or 1500 ppm applied at full bloom in 1977 also resulted in fairly satisfactory thinning effects, although the degree of thinning was less than that of NAA (40 ppm).

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ORG: None

TITLE: "The Heredity of Induced Mutation in Barley (Hordeum vulgare L.)"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 77-85

TEXT OF ENGLISH ABSTRACT: The results of our research on induced mutation in the past few years were summarized in this report. Barley seeds of three cultivars, namely Hedist, Early-maturity 3 and "nameless," were treated with ^{60}Co γ-ray, fast neutrons, thermal neutrons and sodium azide. As a result of these treatments, 18 types of mutants in 8 characteristics (awn length, plant height, spike types, spike with chlorophyll deficiency, waxiness, date of heading, sterility and naked grain, etc.) were obtained, most of which were single gene recessive mutants, but a few of which were semidominant ones. It was also indicated by out study that different mutation spectra occurred in different genetic backgrounds; a deficiency of recessive mutants exists commonly, but this

[Continuation of BEIJING NONGYE DAXUE XUEBAO No 2, Jul [?] 80 pp 77-85]

phenomenon in lethal mutation is more marked than in surviving ones. The means through which to overcome the pleiotropy of the mutated genes were also discussed.

AUTHOR: WANG Hongkang [3769 1347 1660]

ORG: None

TITLE: "Utilization of Sludge in Agriculture"

SOURCE: Beijing BEIJING NONGYE DAXUE XUEBAO [ACTA AGRICULTURAE UNIVERSITATIS PEKINENSIS] in Chinese No 2, Jul [?] 80 pp 87-96

TEXT OF ENGLISH ABSTRACT: This is a review concerning the utilization of sludge in agriculture. The nutrient content and harmful factors of sludge are discussed. In the article great attention has been paid to the changes and movements of the heavy metals in the soil, the plant response after the application of the sludge, the safe limits and guidelines for the use of sludge on land.

9717
CSO: 4009

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TITLE: "The Spiral Structure of the Tropical Cyclone"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 193-204

TEXT OF ENGLISH ABSTRACT: In this paper, starting from the equations describing the tropical cyclone, the spiral structure of the tropical cyclone is discussed and the flow pattern is described. It shows that the formation of the spiral structure is due to the action of internal gravity-inertia waves, particularly internal gravity waves. The spiral form is connected with the phase velocity of waves. The "trailing" spiral structure in the northern hemisphere demands that the spiral lines move counterclockwise and outward. The angle with which a spiral line intersects a circle of radius r is ordinarily less than 45°, and at the edge of the tropical cyclone it is about 10°. The distance between the spiral "arms" is about 220 km for m = 2, 110 km for m = 4. The spiral waves of

[Continuation of QIXIANG XUEBAO No 3, Sep 80 pp 193-204]

the tropical cyclone are dispersive. In the "trailing" spiral, c_{gr} and c_r are always positive, and $c_{gr} < c_r$. It is found that, if the water vapor is enough and latent heat is more than enough, the tropical cyclone may survive.

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TITLE: "The Modeling Experiment about the Zonal-Asymmetrical Heating Effects on the General Circulation of the Atmosphere"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 205-218

TEXT OF ENGLISH ABSTRACT: The heating effects on the general circulation are modeled in a steady rotating dishpan. Characteristics of the flow patterns in the experiments have been investigated and it has been found out that the flow waves n = 1, 2 are distinctly controlled by the heat sources. It is evident that the heating effects on the formation of the mean troughs and ridges are modeled in the laboratory experiments. It has also been found that the heat sources may result in transformation of the wave patterns.

AUTHOR: ZHANG Jiacheng [1728 1367 6134]

ORG: Academy of Meteorological Science, Central Meteorological Service

TITLE: "The Thermal Effect of Meridional Sea-Land Distribution on the General Atmospheric Circulation in Eurasia and Its Contiguous Areas"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 219-226

TEXT OF ENGLISH ABSTRACT: In this article a simplified scheme on the thermal effect of meridional sea-land distribution to the atmospheric circulation is proposed. Considering the geographical peculiarities of Eurasia and its contiguous areas, this scheme may be used for explaining the formation of the South Asian jet stream in winter, the South Asian Anticyclone on 100 mb surface in summer, and also the seasonal variation of general atmospheric circulation in the above-mentioned area.

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TITLE: "A Preliminary Study of the Relations between the Coefficients of Chebyshev and Temperature and Rainfall in China"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 227-233

TEXT OF ENGLISH ABSTRACT: In this article the 500 mb height of each pentad in the period 1954-1975 in the area 15-65°N, 75-155°E, are resolved with Chebyshev Polynomials. Some main coefficients are obtained, and the physical explanation of these coefficients as well as the relationships of these coefficients with temperature and rainfall in China are discussed. The main results are as follows:

1. The coefficients A_{10}, A_{01}, which express the meridional and zonal circulation of the atmosphere are correlated with the 10-year running means of temperature grade and monthly average temperature of all parts of China. This correlation makes it possible to forecast the tendency of temperature.

[Continuation of QIXIANG XUEBAO No 3, Sep 80 pp 227-233]

2. A multicorrelation table, formed by the December coefficient A_{00} which expresses average height and the January coefficient A_{10} in the same winter, is a possible tool for forecasting the tendency of rainfall in the coming rainy season (May-August) of the middle and lower reaches of the Changjiang. Good results have been obtained in three-year applications.

AUTHOR: DING Shisheng [0002 1102 8508]

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TITLE: "The Climatic Analysis of Low Temperature in Summer over Northeast China and Influence on the Agricultural Products"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 234-242

TEXT OF ENGLISH ABSTRACT: In this paper, the summer temperature over northeast China, 1881-1978, has been examined by climatic analysis. It has been determined that the heavy low temperature in summer over northeast China is a kind of very large-scale phenomenon for space and time. The sum of monthly mean temperatures for May-September in Changchun may well represent the cold and warm summers over the northeast China districts. The summer temperature over northeast China has obvious stages, a 110-year-long period and a 3-year period. If the summer temperature over northeast China is low, heavy damage to the agricultural products will happen. During years of cold weather damage, the heaviest damage is done to growing rice, while sorghum is the next damaged crop.

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ORG: All of the Shanghai Meteorological Bureau

TITLE: "Seasonal Forecast of Spring Rainfall at Shanghai"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 234-249

TEXT OF ENGLISH ABSTRACT: Spring rainfall at Shanghai is classified according to the number of total rain days and the characteristic distribution of the rain days. The category of spring rain is found to be well related to the number of days with Ural blocking high in the preceding winter (December-February). Finally, a forecast is made with good results for the category of spring rainfall of 1979.

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TITLE: "The Structure of the Boundary Layer after the Passage of a Cold Front"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 250-259

TEXT OF ENGLISH ABSTRACT: The structure of the boundary layer for the process of strong weather after the passage of a cold front is discussed using the data of the acoustic radar, the temperature and wind speed obtained from an 80 meter meteorological tower, and the radiosonde sounding and analyses of the weather maps. It is shown that the formation of strong wind is closely correlated to the subsidence of the upper cold air as well as the process of the boundary layer.

The analytical results indicate that the weather process of the strong wind is probably formed by the interaction of the momentum flux with the heat flux due to the subsidence of the cold air in the boundary layer.

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ORG: Both of the Institute of Atmospheric Physics, Chinese Academy of Sciences

TITLE: "A Study on the Formation of the Precipitation in Convective Cloud with Cell Structure"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 260-268

TEXT OF ENGLISH ABSTRACT: The formation of precipitation in convective clouds with cell structure is investigated based on the fact that a cloud consists of a great deal of cells in different phases. Considering that the water content and speed of the updraft in the cloud cells are larger than those in their environments, a cloud model in which droplets grow by stochastic coalescence under the condition of simultaneous fluctuation in water content and updraft is designed.

According to the growth of precipitation particles by coalescence in clouds, a relationship between the droplet growth and its displacement in the cloud with cells is obtained, and we have also discussed the size distribution of

[Continuation of QIXIANG XUEBAO No 3, Sep 80 pp 260-268]

precipitation particles after they have passed through the convective cells at random.

We have calculated the formation of rain and hail in different conditions. It can be shown from the spectrum of precipitation obtained when the above behaviors are considered that larger precipitation particles could be produced in shallow clouds in this case as compared with the same situation (i.e., water content and updraft) in which no cells exist. We have also calculated the effect of the various parameters of the cells on the formation of precipitation, and found that the more the fluctuation is, the larger the elements of precipitation will be. The results calculated show that the rainfall and hailfall in the model fit the realistic state.

AUTHOR: MIAO Jinhai [4924 6930 3189]

ORG: Department of Geophysics, Beijing University

TITLE: "Relationship between the Propagation of the Development of Long Wave Instability and Seasonal Changes of the Atmosphere"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 269-276

TEXT OF ENGLISH ABSTRACT: In this paper it is shown that the notable seasonal changes of atmosphere circulation, such as the beginning and end of Mai-yu and the establishment of winter circulation, were achieved with a medium-range process in which there was the propagation of the development of long wave baroclinic instability downstream.

AUTHOR: YIN Hong [1438 1347]
ZHU Yuanjing [2612 0337 4552]

ORG: Both of the Department of Geophysics, Beijing University

TITLE: "The Best Frequency for Remote Sensing of the Temperature of Upper Troposphere by Ground-based Microwave Radiometry"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 3, Sep 80 pp 277-280

TEXT OF ENGLISH ABSTRACT: By the measurement of brightness temperatures at various elevation angles, the remote sensing of atmospheric temperature profiles with the ground-based microwave radiometry can be realized. It was shown that for the temperature remote sensing of the upper troposphere (500 mb to 100 mb), a frequency of around 53.1 GHz gives the best results.

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China Report

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No. 110

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1. GENERAL INFORMATION

COUNTRY'S PURCHASE OF U.S. GRAIN DISCUSSED

HK280307 Hong Kong WEN WEI PO in Chinese 28 Oct 80 p 2

[Editorial: "On the Sino-U.S. Grain Trade Agreement"]

[Text] China and the United States signed a grain trade agreement in Beijing on 22 October. By the terms of the agreement, the United States will sell China at least 24 million tons of wheat and corn in the next 4 years. According to U.S. officials, this agreement represents one of the largest deals ever negotiated by the United States, and will bring American farmers an annual income of about US$1 billion.

This is not the first time China has bought grain from abroad, but it is the first time she has signed a long-term agreement of this kind with a foreign state for the purchase of such large quantities. Previously China bought grain mainly from Australia and Canada, yet today she turns to the United States; this cannot be compared with ordinary international trade, and is actually of far-reaching significance.

People have opined that by buying grain from the United States in this fashion China is as good as helping to get President Carter reelected, and certain U.S. congressmen have even attacked Carter on this point. We hold that it is really a bit onesided to look at this deal in this way. China has her reasons for buying such large quantities of grain from the United States instead of from other countries, but she is not aiming to influence the U.S. election.

As everyone knows, the United States has slapped a grain export embargo on the Soviet Union due to that country's invasion of Afghanistan. Previously, the United States sold a lot of grain to the Soviet Union, and now that this route is blocked, the interests of the grain farmers and laborers will naturally be affected. If the U.S. Government is forced to revoke the embargo on account of internal pressures, her opposition to Soviet aggression will be weakened, and strong dissatisfaction will be aroused among the grain farmers and laborers if no grain outlet is arranged. China has extended the hand of friendship to the United States precisely when the U.S. Government is confronted with these two difficult issues.

China's grain purchases are of course also aimed at relieving her own grain needs, but they are also aimed at strengthening the U.S. anti-hegemonist position and insuring that the United States will persist in her policy of embargoing grain exports to the Soviet Union.

Carter is the current president of the United States, and it is natural that he should sign a grain trade agreement with China. China, however, bases her vision on the overall situation and does her utmost to carry out her moral responsibilities for the good of Sino-U.S. interests. Unlike the U.S. Government, she will certainly not just consider temporary advantage or disadvantage, violate the spirit and stipulations of the Shanghai communique and the Sino-U.S. resumption of diplomatic relations, treat personnel from Taiwan as diplomats and sell military equipment to Taiwan. These actions of Carter do not conform to the interests of the people of the two countries, and naturally caused the Chinese Government to protest. China will absolutely not trade principles on the Taiwan issue. She can choose various ways of bringing about the return of Taiwan to the motherland; of course peaceful reunification is the best way. However, China will not lower herself to the same level and neglect grain trade; so she has despite everything signed an agreement that benefits Carter and the U.S. grain trade. China holds that opposition to Soviet aggression and expansion takes first place in world politics today.

Through the grain trade agreement signed by China and the United States, we hope that the United States will clearly understand China's stand: It is extremely important to uphold the interests of the two countries, and make common efforts to oppose Soviet hegemonism so as to safeguard world peace. The development of friendly relations between China and the United States will not tolerate hindrance from anyone. The signing of the Sino-U.S. grain trade agreement should not be devalued over the issue of who is to win the U.S. election. Wise men will be able to understand this very clearly.

CSO: 4007

COMMENTARY LOOKS AT OVERCOMING DROUGHTS, WATERLOGGING, ALKALINITY

Beijing GUANGMING RIBAO in Chinese 7 Aug 80 p 1

[Article: "Only by Doing Things in Accordance With Objective Laws Can Drought, Waterlogging, Salinity, and Alkalinity Be Conquered"]

[Text] The plain of the Huang, the Huai and the Hai rivers covers an area totaling 300,000 square kilometers, with a cultivated area of 270 million mu, and a population close to 200 million. Here the resources in climate, soil, and water are extremely abundant. Historically, it has been China's foremost area of agricultural production. But over the years, as a result of the limitations of springtime drought, summertime waterlogging, and soil alkalinity and salinity, output has been low and inconsistent. In the 30 years since Liberation, though great changes have taken place in the face of the land here, still in the drought stricken, waterlogged, and alkaline areas, per mu yields of grain are only 200 to 300 jin, which is far below the national average. Consequently, bringing this region under control is not only an urgent demand of the broad masses of the people of the region, but is also of major significance in hastening the development of the modernization of China's agriculture.

How best to conquer drought, waterlogging, alkalinity and salinity so as to change with all possible speed the backward look of the Huand-Huai-Hai Plain? We may find an answer in the lessons of historical experience. During the 30 years since Liberation, although we have had many major successes in study in this regard and have accumulated quite a few experiences, we have also done quite a few things that have damaged the wealth of the working people, for which the lessons are rather deep. Between 1958 and 1961, in order to solve the irrigation problem quite a few areas blindly made diversion channels for the Yellow River, blocked rivers, and built dams in a major effort to build reservoirs on the plain. There was irrigation without drainage, which brought about secondary alkalinization and salinization, or waterlogging. In the three provinces of Hebei, Shandong, and Henan, the area of alkaline and saline soil increased from the 28 million mu of the mid-1950's to 48 million mu. Following treatment of the alkaline and saline soil in these three provinces, the affected area declined to 21 million mu, after which some areas, when faced with drought, again blindly built diversion channels from the Yellow River for irrigation, and constructed sluice gates in watercourses to store water. The area affected by secondary alkalinization and salinization again expanded to 28 million mu. This shows that in order to cure the drought, waterlogging, salinization and alkalinization problems of the Huang-Huai-Hai Plain, things must be done in accordance with natural laws.

China's researchers have now gained important understanding of the laws and have scored major successes in bringing under control drought, waterlogging, salinization and alkalinization. The formulation, in particular of a zoning plan for comprehensive control of drought, waterlogging, alkalinization, and salinization in the Huang-Haui-Hai Plain has provided scientific data for our control of this region. The crux of whether this plan can be implemented in the future lies with every echelon of leadership of this region. In the past, the alkaline and saline soils in some places were not brought under good control or else the condition recurred several times, mostly because the leadership in those places contravened objective laws and blindly resorted to idealistic "blind direction." Secretary Zhang would come to dig a ditch only to have Secretary Li come along and fill in the ditch, with the expenditure of a great deal of money for no visible results. In order to avoid similar lessons and do things in accordance with objective laws, it is essential that leadership cadres on all echelons in this region master specific ways to control alkalinity, rapidly changing from greenhorns to experts. Facts have repeatedly shown that in instances where leadership cadres, and particularly the principal leadership cadres, have been able to master the knowledge pertinent to control of alkalinity or have been able to become experts in the control of alkalinity, it is in these regions that the old look will certainly take on new color.

In the conquest of drought, waterlogging, salinity and alkalinity in accordance with objective laws, of major importance is the need throughout for adherence to a correct direction for comprehensive control, because drought, waterlogging, salinity and alkalinity are interrelated and mutually restrictive. Sole reliance on engineering methods or biological methods is not likely to bring required results. Only by combining the two for comprehensive control with across-the-board development of agriculture, forestry, and livestock raising can good results in control and good economic results be attained. This requires doing a good job in the areas of agriculture, forestry, livestock raising, and water conservancy with coordination among several disciplines. If this is not done, it will not be possible completely to control drought, waterlogging, salinization and alkalinization according to objective laws, and then water conservancy authorities will give attention only to engineering methods, and agricultural authorities will stress only biological methods in an erroneous tendency in which each is a law unto itself, which will finally lead to control work that is slight, slow, of poor quality, and expensive.

For the conquest of drought, waterlogging, salinity and alkalinity, a good job of management according to objective laws must also be done in a process whereby the control of each tract will be followed by development of each tract, and consolidation of each tract. Each jurisdiction will have to set up drainage systems, and rationally develop use of underground water, particularly of underground water just under the ground, strictly control the water table, adapt methods to local situations to handle the relationship among drainage, irrigation, and storage, institute complete and comprehensive technical management measures and establish both strict management systems and systems of responsibility. Additionally, it will be necessary to intensify dissemination of scientific knowledge about prevention and control of drought, waterlogging, alkalinization, and salinization, and vigorously do a good job of training of grassroots level technical forces.

We believe that only if leadership cadres on every echelon and the masses living on the Huang-Huai-Hai Plain will prevent and control drought, waterlogging, salinization, and alkalinization according to objective laws can this greatest plain in China become, in the not too distant future, a fully developed, rich and populous treasureland for agriculture, forestry, livestock raising, sideline occupations, and fisheries.

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CSO: 4007

CHARACTERISTICS, CULTIVATION OF NEW RICE VARIETY

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 5, 15 May 80 p 2

[Article by Zhang Duanquan [1728 4551 3123] and Yu Chengzu [0060 2110 4371], Xuzhou Prefectural Agricultural Institute, Jiangsu Province: "New Rice Variety--Xudao No 1"]

[Text] Xudao No 1 (name formerly used: irradiated early Ribenqing) was bred in 1974 by our institute following the irradation of Ribenqing with gamma rays from cobalt 60. In evaluation experiments with summer rice performed in our institute in 1977, it showed a 9.4-percent increase in output over Ribenqing, and it ripened 8 days earlier as well. In combined experiments with medium-late geng varieties of rice conducted in 1978 on rice from northern ricegrowing areas (the Huang-Huai river ricegrowing area), average yields were 935 jin per mu, an increase of from 2.3 to 19.3 percent. Suburban areas of Xian have already begun to popularize its cultivation. In combined experiments conducted for 2 consecutive years in Xuzhou Prefecture on early-maturing intermediate geng rices, per unit yields averaged 835 jin, a rate of increase of from 1.3 to 21 percent. Communes and production brigades located near our institute are now planting it over a fairly wide area, and it has been acclaimed as a superior variety noted for its early maturing, short stems, bumper output, high grain-setting rate, and consistent output.

Characteristics and Properties

Planted in summer, its total growth period is about 135 days, which is similar to that of Sidao No 4. It is suitable for rotational planting after wheat or green manure crops in the Huang-Huai area. [Its characteristics are:] strong tillering; plants fairly short, measuring about 95 centimeters in height; sturdy stems; fairly resistant to lodging; stronger resistance to bacterial blight than Sidao No 4; delicate growth; even panicle formation; stems green and grain yellow at full maturity; medium-size panicles; 65 grains per panicle; high grain-setting rate; about 25 to 26 grams per thousand weight of grain; superior quality rice; thin husks; rate of output of unpolished rice, 83.3 percent.

Essentials of Cultivation

1. Inasmuch as its growth period is short, this rice is suitable for growing in rotation with wheat crops on large areas of fields with low fertility. Seeds are sown in mid-May; transplanting may be done in mid-June, when the seedling age is about 30 days. Sparse seeding and adequate fertilizer will produce strong seedlings.

2. As regards closeness of transplanted seedlings, this rice is suitable for close planting of its small plants in rows that are 5 cun apart, with plants being 3 cun apart. There should be 40,000 planting holes for each mu, with five or six seedlings planted in each hole. 3. There should be early application of tillering fertilizer to give the plants "a boost." Nitrogen should be withheld in midseason; when the number of stems and tillers total around 400,000 per mu, irrigation should be withheld until the field is baked dry, so as to prevent the rows from growing shut too early, leading to sheath and culm blight damage. About 20 days prior to the formation of panicles, panicle fertilizer should be applied, depending on the condition of the plants.

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FURTHER IMPROVEMENTS IN HYBRID RICE OUTPUT POSSIBLE

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 5, 15 May 80 p 3

[Article by Lou Xizhi [1236 1585 4363], Chinese Agricultural Institute: "Going a Step Further in the Farming of Hybrid Rice"]

[Text] As of 1979, hybrid rice was being cultivated on more than 76 million mu throughout China for an increased output of 7.8 billion jin of paddy, accounting for two-thirds of the total annual increase in grain production nationwide. During 1980, hybrid rice will find new development in additional areas. In order to increase further the output of hybrid rice, this article presents some views on adapting methods to local situations, sensibly selecting combinations for use, doing a good job of seed propagation, insuring the purity of hybrids, intensifying research in cultivation, and improving cultivation methods.

Adaptation of Methods to Local Situations and Sensible Selection of Combinations for Use

Combinations currently extended to production over wide areas are principally the male sterile lines of the wild aborted types Zhenshan 97, Erjiunan No 1, Wei 20, and Wei 41 in combination with restorer lines number 2, 3, and 6. Experience in production has shown that though these combinations have characteristics common to hybrid rice, each individual combination also has different strengths in accordance with the characteristics of their local climate, their farming system, soil fertility, and the incidence of diseases and insect pests, continually reaping fine harvests as a result. There are other individual places, however, that have not carried out experiments or demonstrations in advance, but have blindly extended cultivation of ill-advised combinations, incurring unnecessary losses as a result of which they have learned a hard lesson.

Following 3 years of regional testing nationwide, from which several quite good combinations were selected and approved, planting of these combinations as a late crop has begun in Hunan, Jiangxi, Fujian, and Zhejiang. Newly bred disease-resistant combinations such as Hunan's Tanlong No 4, Weiyou 35, and Weiyou 55 have undergone appraisal for 10-resistance characteristics, in which they have showed resistance to green and yellow dwarf virus disease in the absence of treatment with chemicals and produced quite high output. They are now being widley propagated and test-planted in the Binhu disease area. Hubei Province has combinations that are not sensitive to high heat and are resistant to yellow dwarf virus disease. Fujian Province has combinations resistant to leafhoppers, bacterial blight, and sheath and culm blight.

In the geng ricegrowing areas of North China, several good combinations have resulted from regional testing and evaluation in production. In Liaoning, Beijing, Hebei, and Shaanxi, these combinations have demonstrated strong characteristics of high output, early ripening, and tolerance of cold. Newly bred early ripening combinations have shown definite heteroses in Hunan and Jiangxi, following regional testing.

Doing a Good job of Seed Propagation and Preserving the Purity of Hybrids

Several years of experience have shown that the output quantity in seed propagation and, particularly, the quality of the output are the main links directly affecting increased production and the speed of development of hybrid rice. During the past 2 years a fairly large increase in output has taken place in seed propagation, but the increase is not balanced. The high has been 400 to 500 jin per mu, while the low has been only 20 to 30 jin per mu. Thanks to attention given by the leadership, a fairly perfect breeding and seed propagation system, a technical force and a place for breeding and seed propagation that has not been subject to changes, plus a series of rather complete procedures for stock seed production, and rules and regulations for technical operations involved in breeding and seed propagation, quite a few places have made very great increases in the quantity and quality of their breeding and seed propagation, thereby increasing the output derived from hybrid rice. There are also some places that have adopted a tier arrangement in their seed propagation work--for example, in some counties that have 1,500 mu of seed propagation fields scattered over more than 900 different sites, so that there is no need to be concerned about separation to prevent accidental hybridization, or about preservation of purity, or about increasingly serious adulteration and regression of hybrids. The adulteration rate is generally about 5 percent. When severe, it is from 40 to 50 percent. According to preliminary statistics from Hunan, for each 1 percent of decline in purity of the first generation of hybrid, harvests are smaller by about 10 jin per mu, and when the adulteration rate is more than 10 percent, having any heterosis is difficult, and reduced output may even result. Consequently, doing a good job of purification and rejuvenation work is a top priority matter. Unless this matter receives sufficiently careful attention, the development of hybrid rice may be impaired.

Purification and rejuvenation of hybrid rice and breeding and seed propagation are tasks with strong political, seasonal, and technical characteristics for which there must be a strengthening of leadership, a designation of responsible units, and the appointment of superior variety farms or agricultural institutes within the province or within prefectures that are responsible for purification and rejuvenation and for the supply of stock seeds. There must be continued propagandization and promotion of county seed propagation (or commune seed propagation), with centralization of breeding and seed propagation such as is appropriate to the different natural areas within a county. The object of purification must be combinations that have withstood the test of production over wide areas, that have strong heterosis, good resistance, broad adaptability, and future developmental prospects in the local area. The purification method should generally be the back-crossing of paired sterile lines and the test-crossing of paired restorer lines, thereafter making selections through a comparison of plant lines. The focus of purification must lie first of all in making sure of the purity of the sterile line, and conditionally of the purification of "three lines" that are linked, so that results will be better. Currently, the method of purifying the "three lines" is still fairly complex, requiring continued strengthening of research, study of experience, simplification of procedures, shortening of

time required, and early solution to the problems of adulteration and regression in some places. Those hybrids that have been seriously adulterated must be resolutely eliminated.

Intensifying Research in Cultivation and Improving Cultivation Methods

Hybrid rice must possess the characteristics of strong tillering, well-developed root systems, luxuriant growth, sturdy stems, large panicles with numerous grains, a high rate of photosynthesis, strong metabolism, resistance to lodging, resistance to drought and tolerance of waterlogging, and broad adaptability. Whether or not these characteristics can produce increased output in production will be decided, to a very great degree, by sensible cultivation methods. Take reasonably close planting, for example. First of all, since in some places there is overreliance on tillering to form panicles, only a single plant is placed in each hole and tillering is 15- to 20-fold. Such colony development not only increases the quantity of tillering fertilizer used, but it makes keeping control over water and fertilizer very difficult, with attendant lack of greenness in plants and late ripening, an increase in the rate of small panicles, and a decline in the grain-setting rate. According to surveys, in most cases the number of panicles per mu has been aroud 150,000 for the past several years. The results of comparison of experiments in various places has shown that this number of panicles tends to be low. Over the past 2 years, every location has made the suitable increase in number of holes and the transplanting of an adequate number of basic seedlings the chief measure for assuring that the number of panicles will result in increased output of hybrid rice. Under most conditions today, for the early crop of hybrid rice each mu has from 20,000 to 25,000 holes, and from two to three seedlings are transplanted into each hole (including those great tillerers with three leaves). From 60,000 to 80,000 basic seedlings are planted per mu. For double-crop late rice, there are between 20,000 and 25,000 holes per mu, with from 80,000 to 120,000 120,000 basic seedlings. About 3 jin of seeds per mu are required. Each locale has to be flexible, basing its actions on overall consideration of the fertility of local soil, use of light energy, different combinations, and level of cultivation. They must gradually accomplish a compatability between the individual plants and the colonies, a correlation between the number of panicles and the number of grains, and a mutual coordination of main stems and tillers so that under different conditions, hybrid rice will form different high output colony structures.

Formerly, some places had problems as a result of cutting back on water too early, which was bad for the growth of roots and the extension of the functional time for the leaves. Preliminary study has demonstrated that hybrid rice requires less water than rice in general per jin of paddy produced, but the intensity of water requirements is quite large, with the disparity being greater following flowering. Fields must be baked only to the proper degree, and resumption of water must be prompt. The water management technique whereby water may not be deprived too early provides theoretical data. Factual examples demonstrate that hybrid ricegrowing techniques in China have improved to varying degrees, but they await further improvement and perfection.

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RESISTANCE OF PADDY RICE VARIETIES TO DIFFERENT BACTERIAL STRAINS STUDIED

Tianjin ZHIWUBAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 1, Mar 80 pp 41-47

Article by Wu Shangzhong [0124 1424 1813], Xu Xianming [1776 5029 2494], Lin Yunsong [2651 6663 2646], Chen Fukun [7115 4395 0981], Cui Liqiang [1508 0500 1730], and Liu Jingmei [0491 2529 2734] of the Plant Life Preservation Institute of the Guangdong Provincial Academy of Agricultural Sciences: "Resistant Reaction of Paddy Rice Varieties to Different Bacterial Strains of Xanthomonas Oryzea in Guangdong"]

[Text] Abstract

The resistant reaction of 46 varieties of paddy rice to 60 bacterial strains were determined. These varieties can be classified as type I, broad spectrum resistant, II, nonbroad spectrum resistant and III, nonresistant. Varieties of type I are mostly varieties introduced from other localities and their hybrid derivative varieties (lines). Only a few of the varieties of type II have better resistance; most of them are medium resistant or medium susceptible. All of the varieties of type III are susceptible but their characteristics for producing bumper harvests are better. To breed more new varieties that are disease resistant, we believe varieties with a broad spectrum resistance should be selected as parents for combining with high yielding varieties. Also one to two strong bacterial strains should be selected and used to screen and select the resistant source or use the resistance of the offspring of hybrid combination to determine the bacterial strain to obtain satisfactory results.

Some of the new short stemmed varieties successfully bred by our province, such as "zai ye qing No 8" planted at different areas showed different resistance. Also for example, "zao jin feng No 5" has medium resistance in Guangdong but in the Hanzhong Prefecture in Shaanxi it is disease resistant. The varieties that originally were sensitive to the disease in Guangdong, such as "guang lu ai No 4" and "guang er ai" selected line showed disease resistance in the rice regions of the Changjiang River Valley. The results of the national regional evaluations of varieties showed that many varieties manifest different resistance and sensitivity to disease in different regions. Only "IR26" showed relatively uniform resistance. This situation reflects the possible existence of differences among the pathogenic lines of xanthomonas oryzea at different regions. Ou Shihuang [2962 0013 3874][5] studied the resistant reaction of 24 paddy rice varieties to

50 bacterial strains of xanthomonas oryzea. Based on the results of such tests, he proposed a differentiation of resistance of the varieties into "broad spectrum resistance" and "nonbroad spectrum resistance." He also discovered different varieties can produce a reaction showing "an ability to recognize" or "no ability to recognize" the bacterial line. Facts show the resistance of the varieties to disease and the pathogenicity of the pathogenic bacteria and their variability are related. In recent years, research in this aspect has been conducted domestically and abroad.[1,2,3,4,6] We selected a total of 46 representatives of locally and provincially bred varieties and varieties introduced from abroad, used bacterial strains collected from 60 different regions and determined the resistance spectrum of the varieties to study and analyze the resistance of the varieties and the relationship between the pathogenic bacteria and their hosts and to seek out the varieties that can "recognize the bacterial lines" and that are suitable for planting in our province, and to improve and elevate the quality of the ways and methods of breeding disease resistant varieties.

Material and Methods

1. Bacterial Strains for the Experiments

A total of 60 bacterial strains (including 33 leaf wilt types and 27 withering types of bacterial strains) were used. Of these, 24 bacterial strains came from 7 rice regions of continental China, Guangzhou, Foshan, Zhaoqing, Zhanjiang, Shaoguan, Huiyang and Shantou, 24 bacterial strains from Hainan Island, 9 from Guangxi, 1 from Jiangxi, and 2 from Vietnam (See Table 1).

Table 1.

Number	Origin	Number	Origin
RB 001	Xiaotang, Nanhai	023	Yelin, Heinan
002	Shilou, Panyu	025	Longguang, Hainan
003	Dashi, Panyu	026	Cenxi, Guangxi
004	Dagou, Yangjiang	027	Cenxi, Guangxi
005	Liantan, Yunan	028	Yingzhou, Hainan
006	Baozhu, Yunan	029	Yingzhou, Hainan
007	Baozhu, Yunan	030	Yingzhou, Hainan
008	Fusha, Zongshan	031	Hailing, Yangjiang
009	Pingsha, Doumen	032	Wengcheng, Wengyuan
011	Dashi, Panyu	033	Maba, Qujiang
012	Bingkeng, Guangning	034	Tianyang, Guangxi
013	Hainan Agricultural Science Institute	035	Beiliu, Guangxi
		036	Cenxi, Guangxi
014	Xinhui Agricultural Science Institute	037	Cenxi, Guangxi
		038	Beiliu, Guangxi
015	Liantan, Yunan	039	Yanbu, Nanhai
016	Yaxian, Hainan	044	Yanbu, Nanhai
017	Dongba, Yunan	049	Shilou, Panyu
019	Longguang, Hainan	051	Beiliu, Guangxi
020	Longguang, Hainan	052	Beiliu, Guangxi

[Table 1 (continued)]

Number	Origin	Number	Origin
053	Humen, Dongwan	064	Chengdong, Hainan
054	Zuojie, Hainan	065	Chengdong, Hainan
055	Juntian, Hainan	066	Chengdong, Hainan
056	Juntian, Hainan	067	Chengdong, Hainan
057	Juntian, Hainan	068	Xiaodong, Vietnam
058	Juntian, Hainan	069	Xiaodong, Vietnam
059	Juntian, Hainan	071	Jiumenzai, Dongwan
060	Juntian, Hainan	072	Xintang, Fogang
061	Juntian, Hainan	073	Tiandu, Yaxian
062	Chengdong, Hainan	074	Jinggangshan, Jiangxi
063	Chengdong, Hainan	075	Shantou

2. Varieties for the Experiment

Forty-six varieties were tested, including 12 varieties bred in our province, such as "zhai ye qing No 8," 3 local varieties such as "tang pu ai," 7 varieties bred outside of our province such as "3303," and 24 varieties introduced from abroad such as "IR2161." The names and origins of the varieties are listed in Table 2.

3. Method of Test

This experiment was conducted from July to October, 1978 in the large late rice fields at Shipai, Guangzhou. The rice field was disease free, dry and high and situated on the lee side. The above varieties were transplanted in the large field for testing. Each variety was planted in one row, one plant was planted in each hole, the row and plant distance was 8 x 5 shi cun. A protective row was planted on the four sides. Transplanting was done on 1 August, 35 days after transplanting (a total of 65 days with the addition of the seedbed period), the rice plants entered the young panicle differentiation period and inoculation was performed by hand by cutting the leaves. The first and second leaves at the tip of the plant were cut with a pair of disinfected scissors dipped into a solution of bacteria. Between 3 and 4 centimeters of the tip of the leaves were cut away. The scissors were dipped into the solution of bacteria every time they cut a leaf. The concentration of the solution of bacteria was 300 million bacteria/milliliter. Cutting the leaves and inoculation were carried out in late afternoon and early evening from 4 pm to 7 pm so that overnight dew kept the leaves moist after inoculation to prevent the cut from drying up and thus affecting the results of the experiments. Twenty to 25 days after inoculation, the length of the disease spots were measured and converted to a severity scale of six grades: highly resistant (HR), resistant (R), medium resistant (MR), medium susceptible (MS), susceptible (S) and highly susceptible (HS).

Experimental results

1. The varieties were resistant to over 80 percent of the bacterial strains, the range of severity was from 0.1 to 3.1. There were 16 varieties that showed

Table 2. Determination of the Spectrum of Disease Resistance of the Varieties (Resistance to 60 Bacterial Strains) 1978, 7-10, Shipai, Guangzhou

Types		Names of Varieties	Origin	Severity of Disease	Resistant		Medium		Susceptible	
					Highly Resistant	Resistant	Medium Resistant	Medium Suscept	Suscep-tible	Highly Suscept
					(in percent)		(in percent)		(in percent)	
	1	3103	Jiangsu	HR	100.00					
	2	IR2161	Philippines	HR-R	98.33	1.67				
	3	IR2061-522-6-9	Philippines	HR-R	93.33	6.67				
	4	G.E. 456	U.S.	HR-R	93.33	6.67				
	5	VPR-70-3-7	Introduced from other localities	HR-R	91.38	8.62				
	6	DV85	India	HR-R	86.67	13.33				
	7	IR26	Philippines	HR-R	64.41	35.59				
I	8	6035-2	Iran (Persia)	HR-MR	81.67	15.00	3.33			
	9	IR30	Philippines	HR-MR	28.33	70.00	1.67			
	10	Beiqing 130	Guangdong	HR-MS	81.30	13.60	1.73	3.37		
	11	IR 36	Philippines	MR-MS	73.33	23.33	1.67	1.67		
	12	IR32	Philippines	HR-MS	50.94	39.62	7.55	1.89		
	13	IR22	Philippines	HR-MS	68.33	25.00	1.67	3.33	1.67	
	14	IR1545	Philippines	HR-MS	23.33	68.33	3.33	5.00		
	15	IR28	Philippines	HR-MS	7.85	68.63	13.72	9.80		
	16	Hai 42	Guangdong	HR-MS	61.67	28.33	3.33	1.67	5.00	
	17	Linxian No 1	Fujian	HR-HS	43.33	46.67	3.33	5.00	0	1.67
	18	1388	Fujian	HR-HS	38.33	40.00	8.33	0	5.00	8.33
	19	74-105	Hunan	HR-HS	33.33	46.67	5.00	8.33	1.67	5.00
	20	Feivin (076)	Philippines	HR-HS	28.33	26.67	15.00	10.00	6.66	13.33
	21	Zhongshan wu ming zhong	Guangdong	HR-HS	15.00	41.67	21.67	10.00	3.33	8.33
	22	2150	Guangdong	HR-HS	5.00	38.33	25.00	11.66	8.33	11.66
	23	IR661	Philippines	HR-HS	1.67	21.67	41.67	11.67	15.00	8.33
	24	Ai tang zu	Guangdong	R-HS		25.00	48.33	15.00	5.00	6.67
	25	Shui tian gu 4882	Indonesia	R-HS		25.00	43.33	20.00	8.33	3.33
	26	Zhai ye qing 8	Guangdong	R-HS		23.73	40.68	16.95	10.17	8.47
II	27	Fu bao ai 22	Guangdong	R-HS		23.73	28.81	30.51	3.39	13.55
	28	Tetep	Vietnam	R-HS		10.00	38.33	33.33	8.33	10.00
	29	BPI-90-3-3	Introduced from other localities	R-HS		18.97	41.38	29.31	5.17	5.17
	30	Tang pu ai	Guangdong	R-HS		8.33	18.33	46.67	18.33	8.33
	31	Zao jin feng 5	Guangdong	R-HS		11.86	27.12	30.51	18.64	11.86
	32	IR24	Philippines	R-HS		9.09	38.18	30.91	10.91	10.91
	33	Qiu er ai 1-3	Guangdong	R-HS		5.00	31.67	38.33	16.67	5.00
	34	Gui zhao 2	Guangdong	R-HS		5.00	20.00	40.00	20.00	15.00
	35	Er bai ai 1	Guangdong	R-HS		1.67	11.67	60.00	15.00	11.67
	36	C022	India	R-HS		1.67	20.00	41.67	23.33	13.33
	37	Dwarf Zenith	U.S.	R-HS		1.75	5.26	29.82	31.58	31.58
	38	Zenith (purple)	U.S.	R-HS		1.67	11.66	36.67	38.33	11.66
	39	Tadukang	Philippines	MR-HS			17.24	46.55	20.69	15.51
	40	Bao tai ai	Guangxi	MR-HS			5.00	48.33	26.67	20.00
	41	9101	Zhejiang	MR-HS			5.00	55.00	16.67	23.33
	42	Guang er ai 5-3	Guangdong	MR-HS			3.33	26.67	28.33	41.67
III	43	Jin gang 30	Jiangsu	MR-HS			1.67	23.33	46.67	28.33
	44	IR8	Philippines	MR-HS			3.33	33.34	43.33	20.00
	45	Zhen zhu ai 11	Guangdong	MR-HS				10.00	51.67	38.33
	46	Guang lu ai 4	Guangdong	MR-HS				3.33	30.00	66.67

broad spectrum resistance, 12 of them showing a relatively strong resistance, "3303," "IR2161," "IR2061-552-6-9," "G.E 456," "VPR-70-3-7," "DV85," "IR26," "BG 35-2," "IR30," "Haiqing 130," "IR36," and "IR32." The 4 varieties, "IR22," "IR1545," "IR28" and "Hai 42" were slightly susceptible to strong bacterial lines. The above varieties constituted the type I varieties and are broad spectrum resistant varieties.

2. Six varieties were resistant to over 50 percent of the bacterial strains, "lian xuan No 1," "1388," "74-105," "fei yin (076)," "zhongshan wu ming zhong" and "2150." These varieties showed a relatively good resistance. But the range of variation of the degree of severity was greater, indicating that their resistance is still not sufficiently stable.

3. Sixteen varieties were medium resistant to medium susceptible to over 60 percent of the bacterial strains. Their resistant reaction wavered between medium resistance and medium susceptibility and showed slightly susceptible reactions to strong bacterial strains. Of these, 7 were medium and slightly more resistant, "ai tang zu," "shu tian gu 4882," "zhai ye qing 8," "IR661," "fu bao ai 22," "BTO-MO-3-3," "tetep." Nine were medium and slightly susceptible, "tang pu ai," "zao jin feng 5," "IR24," "qiu er ai 1-3," "gui zhao 2," "er bai ai 1," "C022," "dwarf Zenith" and "Zenith (purple)." The above varieties are of type II and are medium resistant to medium susceptible varieties. The level of severity has a wide range of variation wavering between resistance and susceptibility, and when encountering strong bacterial lines, they are slightly susceptible to the disease.

4. Eight varieties were susceptible to most of the bacterial strains, "tadukang," "bao tai ai," "9101," "guang er ai 5-3," "jin gang 30," "IR8," "zhen zhu ai 11" and "guang lu ai 4." These are of type III and are susceptible to highly susceptible varieties.

5. There were only 2 disease resistant varieties that were bred in our province, "hai qing 130" and Hai 42. The rest, "zhai ye qing 8," "ai tang zu," "fu bao ai 22," "zao jin feng 5," "qiu er ai 1-3," "gui zhao 2" and "er bai ai" were all medium resistant to medium susceptible and their reaction to strong bacterial lines was slightly susceptible. Therefore, these varieties manifested different resistance at different localities in our province.

Discussion and Conclusion

The results of inoculating 60 different bacterial strains in 46 paddy rice varieties showed the following resistant reactions: the varieties showed different levels of severity in their reaction to the disease depending upon the varieties' resistance to strong or weak pathogenicity and the pathogenic bacteria. This is basically the same as the conclusion reached by Ou Shihuang.

The results of the experiment pointed out that the resistance of the varieties can be classified into three types, broad spectrum resistance, nonbroad spectrum resistance and nonresistance. Type I varieties have a relatively stable disease resistance and it is more ideal to utilize their resistance. Type II

varieties have unstable resistance. They are easily affected by strong bacterial lines. Type III varieties have no resistance. But their economic characteristics for producing bumper harvests are better. Therefore, how to solve this conflict between resistance and high yield is an important question worth studying in future breeding of disease resistance.

Regarding the ability of the varieties to recognize different bacterial lines, types I and III seem to be insensitive to most of the bacterial lines. They can all be considered as varieties "not having the ability to recognize" bacterial strains. Type II varieties are varieties that "have the ability to recognize" bacterial strains. Based on actual need, varieties with different resistance can be selected as determinant varieties in the study of bacterial lines.

In the selective breeding of disease resistant varieties, this experiment has pointed out that most varieties introduced from places outside the province and the varieties (lines) bred from these varieties all have a broad spectrum resistance while our province's local varieties or their hybrid disease resistant varieties generally have a narrower resistant spectrum. It can thus be seen that in the screening and selection and the evaluation of resistance to xanthomonas oryzea of paddy rice varieties and in obtaining varieties with a broad spectrum resistance, bacterial strains with strong pathogenicity must be selected as a screening and selection device to screen and select only those truly highly resistant varieties.

In the selection of parents of resistance source, the disease resistant varieties bred in our province in the past have all been hybrid combinations of medium resistant to medium susceptible local or introduced varieties such as "tang pu ai," "2150," "zhai ye qing No 8," "bao tai ai," "IR661," "IR24," and "shui tian gu 4882" as one parent coupled with susceptible varieties such as "guang er ai No 5," "IR8," "zhen zhu ai" and "guang lu ai No 4." Therefore, the resistance spectrum of these parents are all relatively limited, and the varieties bred from them also approximate their ancestors. To elevate the quality and level of our province's breeding of disease resistance, we believe that when considering the unification of disease resistance and bumper harvest characteristics, varieties with a broad spectrum of disease resistance should be selected as a parent for coupling with a variety that has superior bumper harvest characteristics and a broad adaptability. Resistance can be induced through hybridization and selection to obtain even more satisfactory results.

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ADVANTAGES OF USING PLASTIC SHEETING ON PLANTS DETAILED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 5, 15 May 80 p 15

[Article by Vegetable Research Institute, Chinese Agricultural Academy (Based on Collation of Data from the Dalian Conference): "Farming in 1979 With Plastic Sheeting Ground Cover"]

[Excerpt] Use of plastic sheeting to cover the ground when planting (hereafter simply called ground sheeting) is a protective cultivation method that has been in wide use for many years in foreign countries. In a certain sense it may be said to be a kind of "root protection cultivation." Japan is the first country to study it and put it to use. During the mid-1960's, we Chinese used ordinary plastic sheeting to conduct experiments on small areas and obtained definitely beneficial results. The Ministry of Agriculture formally introduced this technique in 1978, and 1979 saw its experimental promotion to fairly large areas. In October of the same year, the Ministry of Agriculture convened a special conference to summarize and exchange experiences and to give further impetus to the development of this new technique. Experience has demonstrated that ground sheeting can promote early ripening and increased output of many kinds of crops at low cost, simply and easily. It should be rapidly studied and promoted in China's broad regions.

1. Synopsis of Experiments

Experiments were conducted last year in 14 provinces and municipalities in the northeast, North China, the northwest, and some prefectures in the south. A total of 47 institutes and teaching units as well as 185 production units conducted experiments using ground sheeting with 40 different vegetables, grains, and oil crops on an area totaling 660 mu. In every area, careful measurements and studies were made of the changes in environmental conditions beneath the ground sheeting; the effect of these changes on the growth, development, and increased output of the crops; the growing techniques used with ground sheeting; and the machines and tools used with ground sheeting. They also worked together with plastics industry departments to test-manufacture the sheeting; they evaluated and approved for use as a ground cover the transparent, colorless, polystyrene plastic sheeting. This plastic sheeting has a thickness of from 0.015 to 0.02 millimeters, and it approximates or attains the level of quality of Japanese products. Currently, plastics plants are producing it in batch processes at Changsha, Beijing, Luda, and Haerbin. Each mu requires from 7 to 10 kilograms of it, at a cost of from 25 to 35 yuan.

II. Effects on Growth and Development of Crops

1. Promotion of the growth and development of crops: Observations at all locales have showed that in vegetable production, the height of the plants, the thickness of the plant stems, the degree of development, the leaf area and the numbers of leaves, the number of blooms and number of fruits, and the sizes of the fruit were all greater in ground-sheeting areas compared with nonsheeted areas (hereinafter termed simply the control). Root system development was greatly strengthened. Under most conditions, sprouting occurred from 2 to 10 days earlier when the covering was used. The rate of development increased from 0.1 to 1 times, and leaf areas increased by from 15 to 100 percent. Aboveground fresh weight of vegetables increased by from 0.5 to 2 times, with roots increasing their length by one to three times. Fruity vegetables squared, flowered, and set fruit 3 to 19 days earlier. During the early period of crop growth, the fruit-setting rate and the increase in the pistillate flowers' growth rate were even more striking. As a result, the fruiting and ripening stage was advanced some 5 to 20 days.

Similar results were also obtained in cultivation using ground sheeting for rice, peanuts, cotton, corn, and soybeans.

2. Increased putput: Figures on more than 120 vegetables with which ground sheeting was tested showed that, with the exception of ginger and a decrease of 5.8 percent in output of one kind of cabbage at one test site, there was a general increase in output of from 2.5 to 309 percent. About 80 percent of the vegetables showed an increased output of more than 30 percent. In Laoning and Heilongjiang provinces, rather great increases in of peanut output were harvested through the use of ground sheeting. The Luda Municipal Agricultural Institute had legume yields of from 626.7 to 726.7 jin per mu, an increase of from 39.7 to 62.6 percent over the control. Paddy rice yields at the Jilin Municipal Paddy Rice Institute and in Yichun Prefecture, Heilongjiang Province, showed an increase of from 16 to 201 percent over the controls, and increased output of early rice amounted to between 29.1 and 80.9 percent. Ground sheeting has provided a new path for rice production in places where the frostfree period is short, early spring temperatures are low, and there is a lack of water.

3. Improved quality of output: Ground sheeting can improve the quality of vegetables produced. A survey in Shanxi Province showed a 100-percent rate for first- and second-quality asparagus lettuce grown with ground sheeting, while the third-quality rate for the control was 20.6 percent. The Northeast Agricultural Academy has reported good coloring of tomatoes and cucumbers, and an increase of from 4.7 to 15.7 percent over the control in the solubility of solids. Tomatoes grown with ground sheeting by the Shandong Agricultural Academy had increases of 22 to 33 percent in their pulp content, and 44.5 to 50 percent increase in the amount of vitamin C.

4. Strength of crop resistance: Ground sheeting can reduce damage from diseases and insect pests. Tests have show that the incidence of downy mildew in cucumbers was reduced 16 to 52.5 percent, and the disease index declined 0.61 to 5.83 percent. Additionally, diseases such as mianyibing [4875 4004 4016] in eggplant and dubing [3021 4016] in sweet peppers and hong [5725] beans were less severe. There were, however, cases in which wilt in cucumbers and purpura haemorrhagica in onions was more severe; further experimentation and testing will be required in the future. One of the reasons for the crops' intensified resistance to disease is that the growth of plants is healthier following the use of ground sheeting. Another reason is that the air humidity in the protected area can be reduced by from 3 to 7 percent (Liaoning

Province), thus restricting the development of disease bacteria. A survey in Jilin Province showed that when sweet peppers were grown with ground sheeting, a decrease of 80 percent occurred in the numbers of aphids. Reportedly, this was because the plastic sheeting increased the reflectance of short light waves, causing the aphids to be repelled. Tests conducted by the Gansu Agricultural Academy showed that ground sheeting can reduce the damage done to young tomato plants by early spring frost by as much as 50.2 percent. In this regard, we have given attention to a Soviet research report of many years ago. This report said that air temperatures at ground cover surfaces in early spring are lower than air temperatures at the surface of the soil, so that when frost comes, it forms more readily on such surfaces, and this increases the danger from sudden cold. It must be explained that they used paper as ground sheeting, and it is possible that the benefits from paper are not entirely the same as those from plastic. Further testing and study are necessary. Experiments in Japan have demonstrated that the use of ground sheeting during the "frostfree period" can advance the growth period.

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SCIENTIST WHO DISCOVERED NEW RICE VIRUS HONORED

Beijing GUANGMING RIBAO in Chinese 30 Jul 80 p 1

[Article by Chen Youren [7115 2589 0088]: "Rice Virus Disease, Cuaibing, Discovered Through Penetrating Investigation and Research by Fujian Agricultural Academy Lecturer Xie Lianhui"]

[Text] Fujian Agricultural Academy lecturer Xie Lianhui [6200 5114 6540] has discovered a new rice virus disease, cuaibing [4663 4253 4016], and he has also found a way to prevent and control this disease. His discovery has added a new variety of disease to those rice virus diseases already known in the world, and has made a contribution to research in rice virus diseases which has aroused the attention of academic circles both at home and abroad. This success recently earned him the Award First Class of the Fujian Provincial People's Government for 1979.

In 1969, Xie Lianhui was transferred to manual labor in the countryside at Ganmutang in Ninghua County. While helping the masses control rice blast, he discovered a strange sickly plant in the fields. It was stunted, grew like grass, and produced panicles that were not firm and grains that were not heavy. It posed a very serious threat to paddy rice output, and was given the name rice cancer. Because conditions were lacking at the time, the disease was not classified. In 1972, while Xie Lianhui was writing some teaching materials on agricultural plant pathology, he felt a keen lack of firsthand materials on virus diseases in rice, and he and some other teachers, together with several students, undertook a survey of virus diseases in rice throughout the province, again discovering the same kind of sickly plants. They undertook contagion experiments with the sickly plants, and sent some to the authorities concerned for sectional [microscopic] observation. It was verified that this was a new kind of virus disease in rice, and was given the name cuaibing. Following authentication by Qiu Weifan [5941 4850 5603], a professor at Beijing Agricultural University, and by professors at the Fujian Agricultural Academy, this was deemed a new virus disease of rice heretofore undiscovered elsewhere in the world, the discovery of which was of major significance both from a theoretical and a production standpoint.

Following discovery of this virus disease in rice, Xie Lianhui and the others continued to explore the laws governing its occurrence and the ways to prevent and control it. While continuing to do a good job of teaching, they frequently set off for northern Fujian, western Fujian, and southern Fujian to look into

the situation regarding cuaibing, and to introduce people to means of preventing and controlling it. Once numerous communes and production brigades had accepted their recommendations and carried out control measures, the development and spread of cuaibing promptly halted. During the past several years, Xie Lianhui and the others have been writing dissertations on research into paddy rice cuaibing; these have been published in ZHIWU BINGLI XUEBAO [PLANT PATHOLOGY BULLETIN] and ZHONGGUO NONGYE KEXUE [CHINESE AGRICULTURAL SCIENCE]. The deputy director of the China Plant Protection Society Qiu Weifan, who is China's famous plant pathologist, last year attended the ninth meeting of the World Plant Protection Society Conference in Washington, D.C., where he outlined the successes achieved in this research work. In November 1979, in a special academic report titled "Study of Paddy Rice Virology," prepared as the result of a visit to Fujian Province by famed virologist Dr Lin Ke Zhi [phonetic] of the International Rice Institute in the Philippine Islands, full affirmation was given to cuaibing as a new virus disease and to the new contribution to world research on rice viruses. The British PLANT PATHOLOGY REVIEW excerpted for publication the title and contents of Xie Lianhui's research paper on cuaibing.

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CSO: 4007

COMMENTARY ON DISTRIBUTION WORK IN DROUGHT YEAR

HK250738 Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 16 Oct 80

[Station commentary: "Carry Out Distribution According to Work and Look After Those in Need"]

[Excerpts] Due to serious drought this year, some areas of Hebei have suffered a relatively great decline in grain production. However, there have been relatively great increases in cotton and oil-bearing crop production. Income from diversification and from the commune and brigade enterprises has exceeded that of last year. The total agricultural income will not be lower than last year, and may be slightly higher. This particular circumstance of reduced harvest without reduced income brings new contents to the yearend distribution.

On the other hand, due to the universal implementation this year of the responsibility system linking remuneration to output, it is necessary to make good the rewards and fines in accordance with the regulations. In grain ration distribution, we have gradually expanded the proportion made up from distribution according to labor in the past 2 years. Last year the proportion on the majority of production teams was seven for the number of people to three for labor. This year the majority of teams have instituted six for the number of people and four for labor, or else fifty-fifty. A few teams have also instituted the method of distribution according to labor plus special care for those in need. Thus, the issue of how to better implement the policy of distribution according to work in this year's distribution work and also take care of households in difficulties such as dependents of martyrs and servicemen, "five-guarantee" households, households with many members but few laborers, and dependents of workers and cadres has become a question that must be solved properly.

This year most of the industrial crops tended by the peasants on a contract basis have exceeded their output quotas, in some cases by very large margins. Very many items of industrial and sideline production have also overfulfilled the targets. In this case, so long as the majority of peasants hold that it is rational, we should persistently fulfill the distribution commitments, to facilitate the stabilization of policies and gain the people's trust. Suitable readjustments after discussion by the peasants can be made in certain places where production quotas were set too low on

account of inexperience and distribution commitments would indeed be irrational. However, the matter must be democratically discussed and everyone must agree. It must not be decided by just a few people. In cases where most work groups or peasants could not fulfill the set targets despite hard work, on account of serious natural disasters, the targets can be readjusted, after peasant discussions, to bring them into line with the "disaster" standard.

There are great difficulties and complex circumstances in this year's distribution work, and the task has a strong sense of policy. Leading cadres at all levels should go down to the basic levels to investigate and study, dissect sparrows, and grasp the experiences of points to guide work over areas. Through carrying out meticulous and deepgoing work, they should get a good grasp of the task, so as to protect and further mobilize the peasants' enthusiasm for production and lay the foundation for winning a bumper harvest next year.

CSO: 4007

AQUATIC PRODUCT RESOURCES NOW BEING PROPERLY MANAGED

Beijing GUANGHMING RIBAO in Chinese 30 Jul 80 p 2

[Article: "Hebei Intensifies Aquatic Product Resources Breeding and Protection Work"]

[Text] During the first half of this year, the total output of aquatic products in Hebei Province showed an 18.9-percent increase over the same period last year, and a 24-percent increase in the quantity purchased by the state. At the present time, aquatic products coldstorage lockers in the cities of Shijiazhuang, Baoding, Cangzhou, Tangshan, and Qinhuangdao are filled with fresh fish. A supply is available for the urban people; this is a change in the situation that had existed for many years, when fish was difficult to obtain.

To the east of Hebei Province is the Bohai, where aquatic product resources are extremely plentiful. There are more than 600,000 [illegible] of ports and harbors, shallow beach areas, and saltpan pools, as well as 1.2 million my of reservoirs, pools, and ponds, all of which can be used for the raising and breeding of aquatic products. During the 1950's the maximum annual output of aquatic products for the entire province amounted to more than 124,000 tons. During the past 10 years and more, however, aquatic product resources suffered severe damage, and a great decline took place in the output of the fishing industry as a result of inattention to the breeding and protection of aquatic product resources.

In order to change this state of affairs, Hebei Province last year diligently carried out the spirit of the All-China Aquatic Products Conference and the regulations of the State Council pertaining to the breeding and protection of aquatic product resources, combining these with realities to make specific regulations regarding the standards for catches of major aquatic animals, areas closed to fishing and seasons prohibited to fishing, the fishing tackle and fishing methods employed, and the prevention of pollution to oceans and rivers. In addition, provincial, county, municipal, and inland units located on large bodies of water set up administrative organizations for the breeding and protection of aquatic product resources, adopted vigorous measures, issued fishing industry licenses to fishing boats engaged in fishing industry production, and instituted a ban on and an elimination of nets and fishing methods that destroy resources. As a result of the adoption of these measures, a striking turn for the better took place in the orderliness of fishing industry production in this province. Gangnan Reservoir, located in Pinghsan County, is the largest reservoir in all

of Hebei Province, with a water surface of 580,000 mu for raising fish. As a result of the lack of management, indiscriminate fishing, wanton blasting of fish, and poaching which had endured for a long time in the past without solution, annual fish yields per my of water surface were only 6 or 7 jin. This year there was established a government fishing office, combining specialized management with management by the masses. Each commune and brigade in the area of the reservoir set up fishing industry management units, restructured the system for fishing boats entering the reservoir to engage in production, and brought to book a gang of five thieves who had stolen nets and poached fish on several occasions with damage to the production of the fishing industry, thereby bringing about striking changes for the better in the orderliness of production of the fishing industry at the reservoir. By the end of June, they had already fulfilled their quota of 120,000 jin for the state, in completion of 85 percent of their part of the state plan for the entire year.

Simultaneous with the intensification of breeding and protection work for aquatic products, Hebei Province has also paid attention to the development of both ocean and freshwater breeding. At 14 places throughout the province, commodity fishing industry bases have been set up, with a water surface for breeding totaling more than 80,000 mu. In addition to the breeding that is being done by state-owned and collective enterprises, the families of commune members have also begun to develop fish breeding.

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EFFECTIVENESS OF SPRAY FOR GAOLIANG DEMONSTRATED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 5, 15 May 80 p 13

[Article by Funing County Scientific Committee Corn and Gaoliang Unit for the Coordination of Key Tasks, Hebei Province: "Spraying Gaoliang To Create Dwarfing and Strengthening"]

[Text] The ingredient used to spray Gaoliang so as to dwarf and strengthen it was first put to use by the Agricultural Techniques Station of Shahezhai Commune in our county. Experiments at numerous sites and demonstrations on large areas throughout the county during the past 5 years have demonstrated its outstanding effectiveness. A total of 16 controlled experiments during the past 5 years have all demonstrated increased output. The lowest increase in output was 7.57 percent, and the highest was 55.8 percent. Large area demonstrations at Shahe Commune showed a general increase in output of about 120 jin per mu.

The chief manifestations following spraying with the dwarfing and strengthening ingredient (comparison made with a control) were: a 32-centimeter decrease in plant heights; a 4-milimeter thickening of the stems; a shortening of the spiking stem by 7.2 centimeters, and a 19.6-gram increase in grain wheat. The foregoing are average values for the 2 years 1977 and 1978 from a single demonstration at 12 different sites. In addition, as a result of spraying with the dwarfing and strengthening ingredient, leaves at every test site became wider, thicker, and of deeper color. A survey taken at a farm of the Niutouya Production Brigade showed that sprayed plants had a total of 78 root strands, 29 more than on the control plant, for an increase of 59.2 percent in the number of roots. Spraying of the dwarfing and strengthening ingredient also reduced the aborting of flowerlets and promoted early ripening. Spraying of the dwarfing and strengthening ingredient at 100 times regular strength during the period of jointing (8 to 9 leaves), with the spraying being done three times, brought best results. But spraying three times is both a waste of work and a waste of the chemicals, while changes in output are minimal. Consequently, spraying once or twice usually is sufficient. If spraying is to be done twice, there should be an interval of 5 to 7 days before the second spraying.

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BRIEFS

WASTELAND RECLAMATION--Heihe Prefecture, Heilongjiang Province, has rationally reclaimed and utilized wastelands. It has since 1974 reclaimed 1.72 million mu of wasteland, establishing 18 communes, 2 reclamation areas and 300 production teams. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 23 Sep 80]

CSO: 4007

GRAIN DRYER SHORTAGE, MOLDING GRAIN REPORTED

Beijing RENMIN RIBAO in Chinese 29 Aug 80 p 2

[Article by Xu Baoguo [1776 0202 0948] and Chen Jianhua [7115 1696 5478], Xinzhou County Broadcasting Station, Hubei: "Rural Villages Lack Dryers"]

[Text] During June and July of this year, it was cloudy and rainy for days on end in our county. It rained almost twice as much as during the same period in most years. Because of a lack of drying equipment, the threshed wheat piled in warehouses began to mold seriously. According to statistics from the grain authorities, about 27.3 million jin of wheat throughout the county molded. Of this total 3.64 million jin was more than 25 percent moldy, and 1.05 million jin was unfit for consumption. Summer grain output by the Jiebu Production Brigade of Yangluo Commune amounted to 103,000 jin, all of which molded, and not even seeds were left. The fruits earned through sweat and toil were gained only to be lost. This really made people feel sympathetic!

Fields in our county cover an area totaling 820,000 mu, but there is not a single piece of drying equipment. Whether or not the grain can be brought safely into warehouses depends entirely on the favor of heaven.

It is hoped that the authorities concerned will give a great deal of study to the manufacture of durable drying equipment that can use a broad range of energy sources (including natural energy sources such as wind power and methane gas) so as to help the broad masses of farmers have bumper harvests.

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DISASTER LOANS, OTHER CREDITS GRANTED EXPEDITIOUSLY

Nanjing XINHUA RIBAO in Chinese 19 Aug 80 p 1

[Article by Sun Ronghua [1327 2837 5478]: "Emphasis on Support to Communes and Production Brigades in Rural Villages in Combating Calamities and Reaping Bumper Harvests; Agricultural Banks Everywhere Grant Credits Promptly"]

[Text] For a long time, agricultural banks everywhere in Jiangsu Province have been promptly extending large-scale credit to those areas where rain has caused calamitous flooding so as to help communes and production brigades combat the calamity and reap bumper harvests. In the month of July alone, agricultural production loans amounting to 109.55 million yuan were made throughout the province to help production teams solve their difficulties in getting capital for replanting and fertilizing, for combating flood waters and waterlogging, for controlling insects and preventing diseases, and for increasing drainage and irrigation facilities.

In addition to giving support to the development of agricultural production, agricultural banks everywhere also adapted methods to local situations for the vigorous promotion of comprehensive development by communes and production brigades of agricultural sideline production. Throughout the province, a total of 1,544,766,000 yuan in industrial loans, a 2.7-fold increase over the same period last year have been granted to solve problems that old enterprises have in finding circulating capital for production, and [to make available the] capital for additional construction or new construction and equipment needed by the light industry and building materials industries. Attention has also been given to helping enterprises improve their administration and management, to getting rid of idle and overstocked goods and the unreasonable tieup of capital, and to effecting production changeovers to goods that will sell well. Agricultural banks in Shazhou County have emphasized support to eight textile mills for production of high-quality manufactures, causing the output value of these enterprises during the first 6 months of this year to increase by 112 percent over the same period last year, and profits to increase by 148 percent. Dacang County agricultural banks have granted a total of 11,299,000 yuan in loans to impel commune and production brigade enterprises to follow the road of integration. Currently there are 43 commune and production brigade integrated enterprises in the county. In Wuxi County, attention has been given to helping production teams develop collective sideline industries and commune member household industries. This year a 4.7-fold increase has taken place in the issuance of sideline industry loans over the same period last year.

In order to emphasize support to Xu, Huai, and Yan prefectures, the Provincial Agricultural Bank has set aside 50 million yuan as special loans for the support of production of commodity goods. The recipients of the loans and the items for which loans are to be granted have already been substantially decided upon, and loans are continuously being made. As of the end of July this year, the accumulated amount of agricultural loans made for all purposes throughout the province totaled 2,249,350,000 yuan, exceeding the volume of loans granted for all of last year by 58.9 percent.

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REASONS FOR HIGH OUTPUT OF INTERCROPPED CORN EXPLAINED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 5, 15 May 80 p 12

[Article by Guo Zhenxing [6753 2182 5281] and Wang Yuejuan [3769 2588 1227], Agricultural Techniques Station, Rushanzhai Commune, Rushan County, Shandong Province; "Reasons for Increased Output From Intercropping of Wheat With Corn on "2-4 Plots," and Management Measures"]

[Excerpt] The intercropping of wheat and corn on "2-4 plots" means that wheat plots are 4 chi wide and 2 chi deep. One month before the wheat is harvested, two rows of corn are intercropped along the back of the plot. Our commune has been using this cultivation method ever since 1973, and in 1977 it became commonly used throughout the commune. Along with development of "2-4 plots" has come a year-by-year increase in corn output. Average yields per mu were as follows: 764 jin in 1974; 550 jin in 1977; 674 jin in 1979. Additionally, inasmuch as "2-4 plots" of corn can be cleared early and wheat planted, this has also played a definite role in promoting wheat output.

Reasons for Increased Output

In addition to the increased output potential of late ripening corn varieties resulting from the lengthened growing period that is permitted by direct early sowing, the main reason for increased output from "2-4 plots" is that "2-4 plots" are suited to the characteristics of the local climate. During June, the quantity of rainfall is usually slight and the climate dry, which is just what the corn seedlings in the "2-4 plots" need so that their growth will be restrained while their roots develop. Corn sown in summer is sown during the first 10 days of July, just in time for the seedlings to come up in the rainy season, and frequently because of waterlogging of the sprouts, normal growth and development are impaired. When the corn is intercropped, however, by that time the cornstalks are beginning to become cylindrical (with 11 leaves visible), and the staminate tassel has reached the stage of differentiation of the earlet, when the quantity of water required gradually increases, and when it has rather strong tolerance against waterlogging. As a result, consistently high output results from the intercropped corn.

The time of maximum need for water for the corn in the "2-4 plots" is from the flaring period until the in-milk period (mid-July to late August), which also happens to be the high water season when rainfall is at its maximum, with an average rainfall most years of about 380 millimeters. Corn directly planted in summer has its period from flaring to in-milk delayed until from early August until mid-September, during which time the quantity of rainfall most years is about 280 millimeters. Thus it

may be seen that corn grown in "2-4 plots" has its period of critical need for water just at the time when there is the greatest amount of rainfall. This is the second reason for the consistent output of corn from "2-4 plots."

Between the earing period and the in-milk period, corn requires high temperatures. In the "2-4 plots," corn begins to form ears during late July, just at the season for high temperatures. As a result, the milk formation proceeds very quickly and the weight of kernels increases. By contrast, multiple-cropped corn just begins to ear in mid-August, and frequently climatic warmth is inadequate by the in-milk stage. Formation of the milk proceeds slowly, with impaired kernel weight and a decline in output. This is the third reason for the consistently high output of corn from "2-4 plots."

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JINCHENG COUNTY STRESSES ROLE OF AGROTECHNICIANS

Taiyuan SHANXI RIBAO in Chinese 25 Aug 80 p 2

[Article by Ma Shunsheng [7456 7311 0581]: "Jincheng County Agrotechnicians Achieve Success in Promotional Work; Strengthen the Building of Scientific and Technical Corps; Turn Agroscientists to Best Advantage"]

[Text] Jincheng County has given serious attention to the building of a corps of agricultural scientists and technicians and has made fullest use of its agroscience and technical personnel, thereby enlivening scientific and technical work in agriculture and achieving outstanding successes.

Jincheng County is a large county with varied topography and a complex macroclimate, which particularly needs large numbers of agroscientists and technicians to guide the entire county's scientific farming, adapting methods to local situations. Consequently, all echelons of leadership throughout the county are extremely attentive to the building of an agroscience organization and an agroscience corps. Currently, 404 of the 672 production brigades in the county are operating agroscience corps, and an overwhelming majority of production teams have from one to three agricultural technicians, seed personnel, or plant protection personnel. Throughout the county, the three tier agroscience organization of communes, production brigades, and production teams have a total of more than 7340 peasant technicians. This corps has become an advisory body for the leadership, and a mainstay in scientific farming that has made contributions to agricultural production as follows: 1) Adaption of methods to local situations to promote knowledge of agricultural techniques to bring about a general increase in the level of scientific farming. This county has suffered for many years from drought and lack of rainfall. The agroscience personnel took account of this situation to change the system of farming for corn, wheat, and millet. Throughout the county, they promoted large area intercropping of spring millet with wheat. This kind of millet tolerates dryness and the plants continue to grow. It is suitable for cultivation on drylands, and per mu yields have averaged 300 jin over the years. In the farming of corn, a change was made from irrigation ditches in fields, to furrows, with the cultivation of large and small rows. From this single item alone, the county saved more than 1.13 million man-days each year, and increased grain output by more than 10 million jin. 2) Substantially controlled outbreaks of common crop diseases and insect pests. Adhering to a program of "prevention is paramount, and comprehensive prevention and control," the agroscience personnel have brought under substantial control gaoliang aphids, armyworms, jinhuachong [6855 5363 5722] in rape, snout moth's

larva in cereal grains, red spiders in wheat, downy mildew of millet, and red leaf disease [4767 5509 4016] in persimmon trees. The control area amounts to 75.8 percent of the total grain field area. 3) Principal crop varieties have been converted to superior varieties. Propagation of superior varieties by county and commune bases is done through specialized production in accordance with a regional plan. Last year the area in which superior varieties of all kinds were grown throughout the county amounted to more than 67,700 mu. Superior variety bases were located in 67 places, and all wheat and cotton grown has been converted to superior varieties. The area planted to superior varieties of corn, gaoliang, and pulses is more than 90 percent of the total. 4) A general soil survey was conducted, and soil throughout the county was virtually completely typed. Last year, a quick check was made on the nitrogen, potassium, and phosphorus content of more than 600,000 mu of cultivated land in order to provide scientific data on the rational use of soil resources.

The main reason for the continuous strengthening and development of the Jincheng agroscience corps and for the large role it plays in production is that all levels of the Party organization did a solid job of solving some real problems existing in the agroscience corps, and particularly in the commune agroscience stations.

One was concern for the personal welfare of personnel at agroscience stations. Comrades at the commune agroscience stations are all farmers from production brigades who have a difficult situation, great amounts of work to do, receive no wages, and who have a daily expense in paying for board with peasant families. Consequently, it was necessary to make some reasonable arrangements about renumeration for their labor and their living difficulties. In order to solve this problem, in places where communes were doing a good job of running enterprises, the agroscience stations instituted a wage system paid for out of income earned by commune operated enterprises. In places where economic conditions were poor, a method supplementing work points recorded was worked out with supplemental living allowances coming from income earned by commune operated enterprises and from the agroscience stations' seed operations. Commune agroscience station personnel got grain to eat from a revolving grain store. During their period in the countryside, grain departments supplied grain in fixed amounts. Second was constant restructuring of the organization, recruiting for agroscience stations those comrades who were extremely fond of agricultural science and technology, and transferring to other positions those who were not suitable for work in agricultural science and technology. They also gave attention to keeping people in place as much as possible once assigned. Third was intensification of the building of professionalism and increasing technical levels. During the past 2 years, in addition to its participation in prefectural training, the entire county has organized more than 10 specialized training sessions of various kinds, and during last year alone, the county and the communes ran programs to teach and train more than 450,000 persons in technology, and printed more than 3000 pieces of technical data for distribution. The entire county has been divided into six separate technical promotion grids for regular technical exchanges, with learning from the strong points to some to offset the weaknesses of others for the common elevation of all. At the present time, more than 40 of the 151 personnel at agroscience stations have attained a medium skill level, and more than 80 personnel have attained an elementary skill level, and a large number of peasant technical personnel have also sprung up.

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SOIL EROSION IN SICHUAN SAID VERY SEVERE

Beijing GUANGMING RIBAO in Chinese 11 Aug 80 p 2

[Article by Liu Haifeng [0491 3189 1496], Water Protection Department, Gansu Provincial Water Conservancy Bureau: "Information About Soil Erosion in Sichuan"]

[Text] Recently I had opportunity to return to my own village in Sichuan Province. When I saw that soil erosion there was becoming increasingly serious, I felt deeply disturbed. Authorities concerned in Sichuan Province have compiled statistics showing that a decrease in volume of flow has occurred in the Min River, the Jialing River, the Tuo River, and the Fu River as a result of soil erosion, while a great increase in silt has taken place. A comparison of the volume of flow of the Min River during the 1970's with the 1950's shows an average decrease of more than 2.2 billion square meters, while the amount of silt from erosion has increased by 1.5 million cubic meters. When I visited Wanshan Prefecture located in the Daba mountain system, it just happened to rain for several days in a row, and all along my route torrents of water rushed down mountains, and rivers roiled. During 1970 and 1971, on-the-ground measurements were taken of a moderately eroded watercourse in this prefecture, which showed that annual erosion of silt averaged 1.59 million tons, i.e. each square kilometer lost 706 tons of silt to erosion annually. By extension, every year at least 220 million tons of silt would be eroded from the 44 million mu of land in the entire prefecture.

Comrades responsible for rural village work in the Wanxian Prefecture Party Committee told me very worriedly that in quite a few places, each time it rains hard, giant stones and trees weighing several thousand jin are swept away. The water catchments and hydropower stations here are silting up extremely seriously and will have to be abandoned after less than 20 years of use. The "Rocket" reservoir in the Wanxian watershed area has a storage capacity of 200,000 cubic meters, and it became entirely silted up within 7 to 8 years time and had to be abandoned. The local masses said that "the rocket has gone to the heavens!" The Xiao River hydroelectric power station reservoir in Yunyang County has a storage capacity of 720,000 cubic meters. In 1975, it began to impound water, and now silt has filled one-third of its storage capacity. A comrade in charge at the Longjiao District CCP Committee in Yunyang County reported that the major reason for this state of affairs is that in their quest for greater grain production during the past several years, some people opened to cultivation slopes with 60 to 70 degree grades, so that the soil on these slopes was entirely

washed away. Furthermore, random cultivation of odd plots here and there and the cutting of timber is still fairly universal here. Forests destroyed during the past several years in Wanxian Prefecture in order to grow tea amounts to between 300,000 and 400,000 mu, and even now some cases of the destruction of forests have not yet been promptly handled. Despite such severe erosion in Sichuan Province, there are no people especially responsible for looking after the problem. Nowhere in the province is there an organization for the management of water and soil conservation. Our weakening and destruction of water and soil conservation activities for many years has created seriously disastrous effects. Is it possible that we should not have learned this lesson today?

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NEIJIANG PREFECTURE STRENGTHENS SEED PRODUCTION OF HYBRID RICE, CORN

Chengdu SICHUAN RIBAO in Chinese 16 Aug 80 p 1

[Article by He Shouzhang [6320 1343 4545], Prefectural CCP Committee News Unit, and Shi Huagao [4258 0553 7559], newspaper correspondent: "In Order to Provide More and Better Sources of Seeds To Make Use of Hybrid Heterosis, Neijiang Prefecture Intensifies Construction of Seed Bases for Greatly Increased Output of Hybrid Rice and Hybrid Corn Seeds"]

[Text] Even while propagating and promoting hybrid varieties, Neijang Prefecture's seed authorities have constantly intensified the construction of seed bases. In recent years a great increase has taken place in the output of hybrid rice and hybrid corn seed propagation and the quality has improved for an increase in agricultural output.

Several years ago, when Neijiang Prefecture began to expand its propagation of hybrid rice and hybrid corn seeds, a production team might work several mu of land in widely scattered places for seed propagation with the result that neither cadres nor commune members would give them sufficient attention, and authorities responsible for seeds could not easily provide technical guidance. Consequently output was low, quality poor, and the propagation and extension of the cultivation of superior varieties proceeded slowly. Following a summary of the lessons of experience by agricultural and seed units at the prefectural and county levels in 1978, a group of seed bases were built one after another to bring about centralized propagation of seeds. Each county and municipality designated a Revolutionary Committee chairman or secretary in charge of agriculture, as well as an agricultural bureau chief and a seed station chief to do the actual work. Additionally, they dispatched more than 100 cadre versed in agricultural technology to enlist a group of peasant technicians to provide technical guidance. Through these means, both the area of seed propagation and average per unit yields more than doubled. Last year, they further summarized experiences and intensified the construction of seed bases. They consolidated the former more than 200 rice seed propagation communes into 54, and average yields of somewhat more than 50 jin per unit of area in 1978 rose to 122 jin. The number of communes engaged in the propagation of corn seeds was also consolidated 110, versus the former more than 500, and average per unit yields of somewhat more than 140 jin rose to 172 jin. The quality of superior hybrid varieties also improved to provide the conditions for the extension of cultivation of hybrid rice and hybrid corn throughout the prefecture. Last year, the area planted to hybrid rice throughout the prefecture

amounted to one third the total area planted to rice. This year that area was expanded to two-thirds. The area sown to hybrid corn amounts to more than 90 percent of the total corn area.

This year, in response to new developments in its work, the prefecture seed authorities have further intensified construction of seed bases. Counties with high average per unit yields from seed propagation produced more than 160 jin per unit yields; those with low yields had only somewhat more than 80 jin. Communes and brigades with low yields derived few benefits, and their enthusiasm for doing a good job of running bases vied to get into seed propagation. The prefectural seed company analyzed some of the reasons why commune and brigade yields were low in the propagation of seeds and intensified technical guidance in practical ways. They proposed suitable increases in the number of basic seedlings of the female parent, an increase in the margin for coincidence of flowering seasons, restraint in the quantity of nitrogenous fertilizer used, and increased application of organic fertilizer combined with applications of phosphate and potash fertilizers to promote increased output from the propagation of seeds. Additionally, in view of improvements in seed propagation technology and increased output during the past several years and in conformity with the principles of profits for communes and brigades engaged in seed propagation, economic accounting by communes and brigades using the seeds, and no losses for the state, the rate of exchange between seeds and grain was readjusted from the former 1 to 10 and above to no more than 1 to 10. In Lezhi, Anyue and Ziyang counties, as well as in parts of Jianyang County where drought is frequent, the frequent "moving" of seed bases impaired consolidation of the seed bases. The prefectural seed authorities proposed to the authorities concerned that arrangements be made for some capital to be taken from county soil improvement and water conservancy funds and that additional gratis investment be made for an intensification of capital construction in agriculture for communes and brigades acting as seed propagation bases. Neijiang County has obtained money now from county public finance and from water conservancy funds to build some electric irrigation stations. Following summarization of experiences, numerous seed bases have further implemented systems of responsibility, linking the economic benefits of seed propagation to the personal welfare of those persons involved, encouraging them to study technology, to dig into their jobs, and to perform better in their work of propagating superior varieties.

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ANIMAL HUSBANDRY, WATER CONSERVANCY PLANS DISCUSSED

Chengdu SICHUAN RIBAO in Chinese 16 Aug 80 p 2

[Article: "Do a Good Job of Water Conservancy Construction in Three Zhous Adapting Methods to Locales"]

[Text] Pasturelands covering an area of 300,000 square kilometers in 45 counties in the three zhous of Aba, Ganzi, and Liangshan amount to more than half the area of Sichuan Province. The large tracts of meadowlands in this area plus the grasslands that are used partly for agriculture and partly for pasturage total more than 200 million mu of useable grasslands, or twice the area of cultivated land in the entire province. Here the climate, the quantity of rainfall, and the soil are all better than on the grasslands of North China. More than half of the prairie is covered with superior quality grasslands, amounting to about one-fifth the national total. Nevertheless, the livestock industry has not developed rapidly here for a long period of time. The speed of increase in livestock animals lags far behind that of the prefectures in the provinces where a good job has been done. A major reason for this state of affairs lies in poor capital construction of the grasslands, with a resulting lack of water conservancy facilities, weakness in ability to combat calamities, insufficient water and grass, and few changes in the conditions of production. Pertinent statistical data show that the six purely pastoral counties of Sichuan Province average only 1 li [0.666 square meters] of irrigated forage grass per head of livestock, and for every million mu of grassland, there are only five small-scale water conservancy problems. In Ruoergai and Hongyuan counties in Aba Zhou, where a 10,000-mu range was built, the quantity of grass produced was increased two or three fold by solving the drainage and irrigation problems. This shows that the adaptation of methods to local situations to actively initiate water conservancy construction in pastoral areas is extremely pertinent to the development of a livestock industry in the three zhous.

In order to do a good job of water conservancy construction in pastoral areas, it is necessary, first of all, to solve the conceptual problem of the livestock industry being an important integral part of agriculture, not only correcting the erroneous view that to give attention to agriculture means only giving attention to grain, but also correcting the erroneous way of doing things whereby the pastoral areas are also required to be self-sufficient in grain. As a result of the influence of the extreme leftist line of Lin Biao and the "gang of four," with its lopsided notion of "grain as the key link," the livestock industry was not given serious attention for a fairly long time in the past; as a result,

water conservancy projects in pastoral areas did not attract serious attention. Water conservancy facilities already constructed in the three zhous are in agricultural areas for the most part, while large tracts of grasslands that might otherwise be used have not been put to fullest use for lack of water or a shortage of water. In the grasslands that are being utilized, a gradual regression in the grasslands has gradually taken place as a result of the excessive cutting of forests in recent years, with attendant soil erosion, and the destruction of the ecological balance. In many places today there still exists the backward situation of "relying on the heavens to provide for the livestock, and moving from place to place in search of water." Even more serious has been the requirement for some time that pastoral areas be self-sufficient in grain production with some saying, "herdsmen should not eat grain with a guilty conscience," and diverting pastoral areas to blind cultivation, getting rid of the grass to grow grain. This has resulted in the crowding of herding by agriculture with the destruction of the grasslands. Unless the lessons of experience are summarized, the pernicious influence of Lin Biao and the "gang of four" purged, and a common understanding reached, a good job cannot be done on water conservancy construction for the pastoral areas.

There are very great differences in the geographical locations of pastoral areas in the three zhous, which may be divided into three broad regions: the high mountain region, the semi-high mountain region, the hilly, plains, and low-lying region, and the mountain forest grasslands. The situation is different in each region, and construction for water conservancy has to be done in a pragmatic fashion, adapting measures to local circumstances, and adopting measures of various kinds. In view of the present situation, it is necessary, first of all, to solve as soon as possible the problems of drinking water for people and livestock and the shortage of water on the waterless grasslands. There are more than 8.5 million mu of grasslands without water in the pastoral regions, and in some areas, drinking water for a population of almost 280,000 and for more than 500,000 head of livestock is a very difficult problem. These areas are all fairly high districts located along mountain slopes, which are distant from rivers, and some of them are flatlands at high elevations above sea level where because of lack of water or because of drought, or serious rodent damage or damage caused by insects, the output of grass is low, and the livestock are "fat in the fall, thin in winter, and dead in spring." Such areas should make fullest use of ground water and, to the fullest extent possible, divert and store water from springs and mountain streams to bring about constant storage and careful use of water and gravity irrigation. In places where water resources of any kind are truly lacking, arrangements should be made to sink wells for the development of underground water while at the same time readying irrigation works in an integrated system. Secondly, it is necessary to give strict attention to the transformation of marshy meadowlands. There are more than 22 million mu of marshlands in the pastoral regions. Except for some where the draining of water would be difficult, the others are generally located in alluvial areas on the banks of wide ditches or streams where the topography is flat. At Reerdaba and Tangdiandaba in Ruoergai County and at Rigendaba in Hongyuan County, for example, the marshes cover an area of from 500,000 to 1 million mu or more. Since the area is covered with water year round, not only are there very few types of grass, but the quality of the grass is poor and output is low. Furthermore, there are numerous parasitical insects there, which pose a great threat to the growth

of the livestock. Since the area of marshy grasslands is large, its transformation must begin by doing what is easy, leaving the more difficult until later, with a small investment and small expenditure of labor at first on projects that show quick results. In Hongyuan County in Aba Zhou, the crisscrossing of drainage ditches in a checkerboard pattern plus tier upon tier of terracing to lower the water table has shown excellent results, and now 700,000 mu of transformed marshy meadowland is largely being used for the grazing of cattle. Third should be active development of small hydroelectric stations. Sichuan Province has hydroelectric power reserves amounting to 150 million kilowatts, of which half of the capacity for development is located in the three zhous. Though small hydroelectric power stations have developed very rapidly during the past several years, the development has been extremely unbalanced. At the present time, the 14 counties without electricity are all concentrated in the three zhous, and the lack of electricity in pastoral regions is even more pronounced. Were small hydroelectric stations to be set up in the pastoral areas, not only could electric power be used for irrigation, but it would provide many advantages in the development of commune and production brigade enterprises, processing of livestock products, and for home illumination. The speed of development should be hastened following the principle of small-scale, dispersed, and electricity generated in a place for the supply of that place. Fourth should be fullest advantage taken of existing water conservancy facilities. Water conservancy projects and hydroelectric stations of various kinds have already been built in almost 10,000 places in the pastoral areas, and the management of these projects should be strengthened; they should be renovated and improved upon; they should be completely integrated; and they should be used in a comprehensive way to derive maximum economic benefit from the projects. Additionally, advanced experiences in the scientific and sensible use of water for the protection of grasslands and for the improvement of grasslands should be promoted.

The three zhous constitute a vast area with scant population where the building of projects is quite arduous, and where local financial and material resources are limited. Consequently, to do a good job of water conservancy construction in the pastoral areas means getting support and assistance from every quarter. An urgent matter of the moment is to help the pastoral areas formulate an effective and workable short-term plan and a long-range tentative plan for the future, and to give attention to the small hydroelectric power stations, to the drainage of water, the sinking of wells, and to the spray irrigation test sites now being newly built. The short-term plan requires that every item be implemented, that main points be taken in hand, and that work be phased in a striving for economic results. In every county of the pastoral region of the three zhous, technical forces for water conservancy and hydroelectric power are extremely weak. Those in charge should request that provincial and prefectural water conservancy and hydroelectric power schools operate classes of various kinds to train personnel from the three zhous in surveying, designing, construction, and management. Henceforth, a certain number of graduates of special technical schools and universities should be assigned to the three zhous for work. For major projects, the provincial authorities concerned should organize technical forces to provide help. They should also look after the equipment, materials and capital needs of the three zhous for water conservancy construction, and subsidies given for project costs should be somewhat higher than in the interior of the country. Priority should be given supply of complete sets of the principal machines and appurtenances needed for the building of electric power stations in the three zhous.

Additionally, simultaneously with the construction of water conservancy projects in the pastoral areas should be more vigorous efforts toward the planting of trees to create forests. The overcutting of forests in the three zhous has brought about a great decline in the vegetation cover, and the quantity of rainfall has declined each year, causing a retreat of the grasslands, which poses a major threat to the output of the livestock industry. A good job of planting trees to create forests must be done so that forests will burgeon and grass will be abundant to promote a great development of livestock.

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VEGETABLE PRODUCTION, SUPPLY PROBLEMS DISCUSSED

Tianjin TIANJIN RIBAO in Chinese 18 Aug 80 p 2

[Article by Han Qingyun [7281 7230 0061]: "Output, Variety, and Balance--A Discussion of Three Problems in Vegetable Production and Supply in Our Municipality"]

[Text] Insufficient vegetable production is the main reason for the shortage in the supply of fresh vegetables in our municipality. More than 210,000 mu of land are currently devoted to the production of vegetables in Tianjin, a nearly three fold increase over the 1950's, but output per unit of area has declined by from 30 to 50 percent over the 1950's. Formerly it was commonplace to harvest 10,000 jin of tomatoes from a mu of land, but now getting 5000 jin is a feat. There are many reasons for the decline. One is that the longer the old gardens are farmed, the fewer they become; and the longer the new gardens are farmed, the less fertile they become. Some of the close-in suburbs that produced vegetables most prolifically have long since been made a part of the city, and the new gardens are cropped and rotated with crops with no interval for preparing the soil being given the fields. Year after year the gardens lack capital improvements. Second is a serious insufficiency of organic fertilizer. During the 1950's, each mu received about 5 cubic meters of high grade manure supplemented with cake fertilizer. Nowadays less than 1 cubic meter of manure is given, and most of that is low quality sewage, slag, and garbage. As a result of the large amounts of chemical fertilizers used, the soil has become hard and its natural fertility has regressed. Third is a decline in the level of horticultural skills. Farming is done crudely, and as a result the crops are in their seedling stage for a long time, their growth is slow, and they produce little. Formerly, numerous kinds of eggplant were harvested including genqie [2704 5401], menqie [7024 5401], Simendou [0934 7024 2435], bamianfeng [360 7240 7364] and mantianxing [3341 1131 2502]. Now only menqie is generally harvested and output is scant. Therefore, in terms of production, 210,000 mu of gardens have the output of only 140,000 mu in the 1950's, and naturally this does not meet the consumption needs of the populace. Input of labor and fertilizer, and being particular about techniques to increase per unit yields is doubtlessly the basic path toward solving the shortness in supply of fresh vegetables.

Fewer and fewer varieties being farmed is another reason for our city's shortage of vegetables. During the 1950's and 1960's, romaine lettuce, piaocai [3903 5475] squash, tagucai [1042 0657 5475], garland chrysanthemum, edible amaranth, swamp cabbage, huzi [3902 1311] gourds, loofa gourds, shedou [5748 6258], Chinese yams,

and gendacai [2704 1129 5475] were often seen in the markets, but they have vanished without trace for many years. I fear many young people do not even know what they taste like. As with the revival of plays, it seems necessary as well to revive the varieties of vegetables that the people like. This would not only enrich the people's diet, it would also widen the selection of vegetables to be purchases, thereby ameliorating the shortage.

Farmers explain that the reason for the many years of interruption in certain varieties of vegetables lies in the unwillingness of commercial units to handle small lots. This is, in fact, not to be able to see the forest for the trees. Numerous varieties themselves constitute a definite quantity. Still another problem with varieties is that communes and production brigades pursue high output varieties for the sake of income, and the result is gluts in the markets and periods when only certain vegetables are available in the markets: now yuan cabbage [0337 4101 5475], now peppers, and now tomatoes, which makes it difficult for the masses to have a selection. Take the case of yuan cabbage, for instance. In order to increase their incomes, vegetable farmers all vie in the cultivation of "baochun," and "Jingfeng No 1," two high-yield, early-maturing varieties. They no longer want to grow "heiye pingtou" [7815 5509 1627 7333], even though the quality of this variety is good, because output is low, and it reaches market late and cannot be sold for a good price. As a result, from the end of May until the end of June, yuan cabbage fills every street and lane, inspiring awe in every beholder. But as soon as July arrives, it vanishes without trace. If planned arrangements could be made for sufficient quantities of "heiye pingtou," there would be yuan cabbage in the markets in July. Of course an effective method would be to adopt economic measures so that vegetable farmers would not sustain a reduction in income as the result of growing "heiye pingtou."

This relates to a balance in the markets and a so-called solution to the "off season shortage and the peak season spoilage" problem. In actual fact, vegetables are not in short supply all the time. There are times when supply exceeds demand and load after load of vegetables that cannot find a market are hauled back to the rural villages to be fed to hogs. An underlying premise of balanced markets is balanced production, and vigorous development of off-season production is the key to bringing about balanced markets. Can one imagine using the vegetables that "go to waste" in the peak season to finance development by vegetable farmers of off-season production? Maintenance of production in early spring through measures to shelter the earth would require a great deal of investment. Take large enclosures constructed of bamboo-framed plastic, for instance, where the cost of constructing per mu runs to 800 yuan. More than 500 yuan would be required as a single expenditure each year. When vegetable farmers balance income against expenditures, they feel that production under shelter will not bring in as much money as open air production. If, however, subsidies were made so that expenditures for costs incurred would decline, and so that benefits would show a striking increase as compared with open air production, the vegetable farmers would be happy to provide vegetables during the off season. As for the off season during the interval between summer and fall, this exists mainly because prices for vegetables are not equitable and so the vegetable farmers would rather wait until after the dog days are over before growing radishes and cabbages, and they have no interest in growing vegetables to relieve the shortage and tide over into fall, because a mu of vegetables that tides over into fall will not bring the income

of a mu of Chinese cabbage. If subsidies were given for economic reasons, the off season would no longer be off. For the sake of solving the monotony of vegetable varieties during the winter season, economic methods could be used to encourage communes and production brigades to undertake vegetable storage, as, for example: heeling in (of celery and lettuce), buried storage (for radishes and zicaitou [4793 5475 7333], frozen storage (of spinach and coriander), and cellar storage (of yuan cabbage and Chinese cabbage), etc.

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AUTHOR: HE Duxiu [0149 4648 0208]
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TITLE: "An Investigation on Nucleohistones from Three Lines and Their F_1 Hybrid in Rice"*

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 208-214

TEXT OF ENGLISH ABSTRACT: This paper presents the results of an investigation on the electrophoretic analysis of nucleohistones isolated from rice seedlings of three lines and their F_1. Comparing the histones of the three lines and their F_1 with those of calf thymus, wheat and rice cultivar 192, we found that the rice histones exhibited the same electrophoretic mobility as that of wheat. The electrophoretic mobility and number of H1 histones were highly variable in the species investigated. This revealed that there is no distinct difference in the histones of the three lines. The content of the hybrid H1 histone, however, was higher than the parental H1 content. The fact that the H1 content of F_1 exceeds its parents may be related to the expression of heterosis.

* The "three lines" here denote male sterile line (V20A), its maintainer line (V20B) and restoring line (IR26). Their F_1 is shown by Vyou 6.

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TITLE: "A Diallel Analysis of Some Quantitative Characteristics in Chinese Head Cabbage (Brassica campestris L. ssp. Pekinensis (Lour.) Oisson)"

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 215-222

TEXT OF ENGLISH ABSTRACT: Forty-nine diallel cross F_1 combinations of seven parental lines have been used to estimate the g.c.a., s.c.a., reciprocal effect, sexual effect, nonsexual effect and their variance components of seven quantitative characteristics together with their heritabilities and correlation coefficients, and their possible selective effects are discussed.

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TITLE: "Isozymic Studies on the Origin of Cultivated Corn"

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 223-230

TEXT OF ENGLISH ABSTRACT: The present paper intends to present the results obtained on this problem by means of isozymes. Seventy-eight varieties and inbred lines were used for the experiment, 42 of them introduced from various provinces of China and 36 from different countries in America. Peroxidases and esterases were detected from the extracts of leaves and endosperm. Two species of Teosinte and Tripsacum were taken to be the standard types of corn of American origin and two species from the genus Coix were taken to be South Asian corn.

Results obtained from the detection of peroxidases showed that 59.5 percent of the varieties from South Asia presented a V band of isozymes and 55.6 percent of those from America presented a IV band. Another feature was shown as we took the viewpoint of differences between subspecies. Of the 19 dent corn from America, 16 indicated IV band (84.2 percent) and of the 11 wax varieties from southern

[Continuation of YICHUAN XUEBAO No 3, Sep 80 pp 223-230]

provinces of China, 10 indicated V band (90.9 percent). This might be attached to the influence of hybridization that occurs frequently and easily between different varieties and subspecies. It is interesting to see that Coix also showed the same V band as did the varieties from China, but zymograms of Teosinte and Tripsacum were different from those of American varieties. All of this indicates the possibility of a South Asian origin of cultivated corn.

Zymograms of esterase showed no regularity in differences between two geographical groups of cultivated corn.

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TITLE: "Use of Three Line Combination for Production of Genetic All-Male Tilapia mossambica"

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 241-246

TEXT OF ENGLISH ABSTRACT: This paper presents a report on the artificial control of genetic all-males in T. mossambica. Our experiments indicate that through the approach of three line combination for artificial control of sex, we have attained

[Continuation of YICHUAN XUEBAO No 3, Sep 80 pp 241-246]

100 percent sons (XY♂) in T. mossambica and that the combination among three line of prime line (XY♀), male homozygous line (YY♂) and male homozygous reversal line (YY♀) is the key to production technique.

A comparison of approaches between the sex control of genetic males and that of physiological males was carried out.

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TITLE: "A Preliminary Study on the Parthenogenesis in Cotton (Gossypium hirsutum)"

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 247-256

TEXT OF ENGLISH ABSTRACT: Parthenogenesis induction is one of the methods of plant haploid breeding. So far it has not been reported for the isolated anther or ovule formed plantlet. In this experiment, both the ovary and the ovule of cotton have been treated by chemical drugs to induce the ovule to produce artificial parthenogenesis on the maternal plant.

Two hybrids were used as materials in this test: one is F_1 of Liao 5 x Shensi 3245 and the other is F_2 of (632-128 x Mexico 910) x N75. We treated the flower buds. The age of these flower buds is from six days after the bud's appearance to one day before the flower opens, and they were treated with colchicine, dimethyl sulfoxide and petroleum growth promoting substance of different concentrations and combinations. Four hundred thirty-five flower buds have been treated, of which 102 achieved parthenogenesis bolls. In these parthenogenesis bolls, among these seeds some are undeveloped, some are semi-developed, while others are completely developed. Only the complete seeds may germinate. This test showed that when the

[Continuation of YICHUAN XUEBAO No 3, Sep 80 pp 247-256]

flower buds appeared after 16-21 days and the ratio of the length of the calyx and the corolla was 7.6:9.0 mm - 8.5:9.5 mm, the effect of treatment by 0.2 percent dimethyl sulfoxide + 0.2 percent colchicine was the most pronounced, the frequency of the seed formation in the parthenogenesis boll being higher. In this paper, the accuracy of these bolls derived from artificial parthenogenesis and the problem of the bolls' abscission have also been discussed.

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TITLE: "Preliminary Observations on the Inheritance of Frond Thickness in Laminaria japonica"

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 257-262

TEXT OF ENGLISH ABSTRACT: The brown alga Laminaria japonica is an important seaweed widely cultivated in China. The inheritance of its frond length and width has been studied. This paper discusses only the inheritance of the frond thickness.

According to our observation, the development of the frond thickness is influenced by many environmental and genetic factors. Evidence collected shows that the frond thickness is a genetic characteristic. First, the frond thickness shows a positive correlation of $r = 0.820$ between the parent and the offspring in our experiment. Second, the frond thickness of breed H_3 was observed to be significantly greater than that of breed H_4 for four successive years. The frond thickness

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was found to be a quantitative characteristic showing a continuous variation. Multi-factors were believed to control the growth of the frond thickness. The genetic factors were suspected to act on the cell size and the number of cellular layers in the cortex of the frond. The thick-frond breed H_3 possesses six cell layers more than does the thin-frond breed H_4. Observations on the early growth of the germlings show that the genetic factors seem to begin to act in the young sporophytes of about 2-4 mm long.

As the natural population of this seaweed was found to be very heterozygous in genetic content, various inbred lines or breeds with different frond thicknesses can be obtained by intensive inbreeding and vigorous selection.

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TITLE: "Preliminary Report on Test-Tube Fertilization of Tobacco and Wheat"

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 263-267

TEXT OF ENGLISH ABSTRACT: Recently we have succeeded in studying test-tube fertilization in ovule cultures of tobacco and in vitro pollination in pistil cultures of wheat. The results are presented as follows:
(1) The unfertilized ovules with placenta of tobacco were placed on Nitsch's medium, on which was deposited the sterilized pollen. As a result, the seeds and seedlings in intervarietal cross of Nicotiana tabacum and interspecific cross of N. tabacum x N. rustica and N. tabacum x N. glauca were obtained. The presence of stigma and style could remarkably promote the positive effect of test-tube fertilization.
(2) The unpollinated pistil of wheat was placed on the MS medium in test tubes. Application of sterilized pollen to the stigma resulted in seed set of 1.9 - 7.1 percent. The embryos and seeds could normally germinate and produce mature plants.

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TITLE: "Observation on the Giemsa C-Bands and Somatic Association of the Chromosomes in Cultivated Paeonia"

SOURCE: Beijing YICHUAN XUEBAO [ACTA GENETICA SINICA] in Chinese No 3, Sep 80 pp 271-275

TEXT OF ENGLISH ABSTRACT: By observing the chromosome patterns of three cultivars of Paeonia with Giemsa C-banding technique, it is found that the main difference among them lies in the I and II chromosome C-bands. The number of chromocenters in the interphase nucleus is not constant but variable. These chromocenters remain basically in the anaphase-telophase structure pattern. In addition, it is also found that the percentage of somatic association is 32 percent, and that the percentage of the somatic association of SAT-chromosomes reaches as high as 40 percent.

9717
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TITLE: "Studies on the Moisture Regime in Black Soils in the Northern Part of Northeast China. III. On the Reliability of Water Supply for Crop Growth and the Forecast of Spring Drought in the Region of Black Soils"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 203-216

TEXT OF ENGLISH ABSTRACT: The field evaporation process and the annual rate of crop evapo-transpiration in experimental fields under local climatic conditions were calculated by means of an empirical formula. Comparing data obtained with the average rain process and amount of annual rainfall in the same fields, the results of the water balance in black soils under different crops were obtained. Using these results to evaluate the adequate water supply to crops we found that soybeans and corn had a rather good reliability of water supply, but

[Continuation of TURANG XUEBAO No 3, Aug 80 pp 203-216]

that of spring wheat appeared somewhat short and was apt to suffer from drought. The seasonal frozen layer in black soil played an important role in the regulation of the water supply, and the spring thaw in the frozen layer was the main source of water in the earlier stage of plant growth. Factors affecting spring drought were studied and methods of prediction of spring drought were suggested.

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TITLE: "Chloral Pollution and Its Degradation in Soil"

SOURCE: Beijing, TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 217-227

TEXT OF ENGLISH ABSTRACT: The rate of degradation of chloral in soils is in the following order: quickest in salinized meadow soil, next in paddy soil and slow in red soil. In general, when chloral is exposed to the air and light, or is in contact with an alkaline solution, it is liable to rupture at C-C bond and decompose into $CHCl_3$, Cl_2, etc. However, the transformation of chloral in soil proceeds chiefly to the formation of TCA instead of C-C bond rupture. The oxidation products have been identified by the derivative chromatography and by gas chromatography and mass spectrography. The conversion rate of TCA from chloral was about 56-76 percent with a persistent period of 70-100 days.

Experiments showed that microbiological activities played an important role in

[Continuation of TURANG XUEBAO No 3, Aug 80 pp 217-227]

the degradation process. In non-sterized soils, chloral oxidized to TCA quickly with low activation energy (5.8 Kcal/mol), while in sterized soil, the oxidation of chloral was much slower, the activation energy was comparatively high (23 Kcal/mol) and no TCA appeared. In the former case it was largely due to the microbiological mechanism, and in the latter case to the chemical mechanism.

The effect of chloral and its degradation products on wheat was tested in a pot experiment. Chloral and TCA were strongly poisonous to wheat. After the complete disappearance of chloral, the persistence of TCA had a positive correlation with soil pollution.

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TITLE: "Boron-Deficient Soils and Their Distribution in China"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 228-239

EXCERPT FROM ENGLISH ABSTRACT: In the eastern and southern areas of China boron-deficient soils have been found in large areas, while soils in the arid regions are rather rich in boron. The amount of boron in soils varies with parent materials. Soils derived from shale, limestone and marine sediment are usually rich in boron and those derived from granite and other igneous rocks, gneiss and sandstone are low in boron. Strong alkalinity and rich organic matter in soils reduce the availability of soil boron. Thus the boron-deficient soils may be divided into two types and four subtypes.

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TITLE: "The Availability of Nitrogen of Green Manures in Relation to Their Chemical Composition"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 240-246

TEXT OF ENGLISH ABSTRACT: The nitrogen balance and the availability of residual nitrogen of green manures in relation to their chemical composition were studied in pot and incubation experiments. Azolla, milk-vetch and common water hyacinth were used as green manures and labeled by the fertilization of $(^{15}NH_4)_2SO_4$. Results obtained are summarized as follows:

1. Although plant materials having lower C/N ratios usually give more available nitrogen and the C/N ratio of azolla was lower than that of milk-vetch, azolla contained high lignin of about 20 percent and consequently the percentage recovery of nitrogen by rice plants from azolla was much lower than that from milk-vetch.

[Continuation of TURANG XUEBAO No 3, Aug 80 pp 240-246]

2. The loss of nitrogen from azolla during the growing period of the rice plant was more than that from milk-vetch. This may be due to chemodenitrification.
3. Judging from the nitrogen availability ratio (defined as the percentage of nitrogen originating from plant residues mineralized or absorbed by crops divided by the percentage of soil native nitrogen of the same performances), the residual nitrogen availability of azolla was equal to, or slightly lower than, that of soil native organic nitrogen, while that of milk-vetch and common water hyacinth was usually higher.

It seems that the effect of green manures on the improvement of soil organic matter varied with their chemical compositions. Green manures with higher lignin content usually yielded a lower amount of "active organic matter."

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TITLE: "Nitrogen Cycle in Water Layer of Paddy Field as Affected by the Plantation of Aquatic Plants"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 247-254

TEXT OF ENGLISH ABSTRACT: A review on the effect of the plantation of aquatic plants on rice yield conducted by the authors in recent years is given. It is considered that the nitrogen cycle in the water layer is closely related to the nitrogen cycle in the underlying soil layer, and the plantation of aquatic plants in rice fields showed beneficial effects on the nitrogen economy for rice growth. Another aquatic plant, pistia stratiotes, although not possessing the ability to fix nitrogen from the atmosphere, reduced the loss of nitrogen brought in through irrigation water and fertilizers and diffused from the

[Continuation of TURANG XUEBAO No 3, Aug 80 pp 247-254]

underlying soil. The latter effect is quite important in decreasing the loss of fertilizer nitrogen.

Some discussion on the methods of plantation and utilization of pistia stratiotes is also briefly given. In the case where pistia stratiotes was planted during the growing period of early rice and then plowed under as the basal dressing for late rice, the increase in grain yield of the latter averaged 13 percent without markedly affecting the yield of early rice. Pistia stratiotes may be planted in late rice fields and then used as a top-dressing green manure.

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TITLE: "Experiments on the Reclamation of Saline Soils by Well Drainage in the Coastal Areas of Shandong Province"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 255-266

EXCERPT FROM ENGLISH ABSTRACT: The present article deals with the reclamation of saline soils in the Dayuzhang district of the coastal areas of Shandong Province. Experiments were laid out in the years 1973-1978. Irrigation water was conducted from the Yellow River. Pumping wells in connection with open

[Continuation of TURANG XUEBAO No 3, Aug 80 pp 255-266]

ditches were constructed for drainage. Detailed descriptions and records on the arrangement of drainage systems, seasonal change of water movement in the soil profile, change of salinity of soil water and in soil layers, effect of texture profile of the soil on the rate of drainage and the rate of desalinization of experimental fields were illustrated.

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TITLE: "A Primary Study on the Soil Hydrophilicity"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 267-274

TEXT OF ENGLISH ABSTRACT: The present paper proposes a new characteristic index --the hydrophilicity value of soil (H) for studying soil hydrophilicity, and introduces its measuring method. The H value is defined as a ratio of the volume of water to the volume of CCl_4, both of which are held by a unit quantity of soils.

The magnitude of the H value was mainly related to the component of clay minerals in soils. The results obtained showed that the H value was in the following descending order: bentonite > kaolinite; chernozem > yellow brown earth and neutral paddy soil > red earth > laterite. The time needed to attain an equilibrium state of water holding of soils is positively correlated with the magnitude of the H value.

[Continuation of TURANG XUEBAO No 3, Aug 80 pp 267-274]

Removal of organic matter decreased the H value of chernozem, but had no significant influence on H values of Ca-laterite and Ca-paddy soil. Removal of free ferric oxide showed a remarkable effect on Ca-laterite and Ca-paddy soil.

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TITLE: "Studies on the Transformation of Soil Organic Materials. Part I. Transformation of Organic Materials in Relation to the Amelioration of Soda-Saline Soils"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 275-283

TEXT OF ENGLISH ABSTRACT: This article deals with the transformation of organic materials and its effect on the properties of soda-saline soils. The results obtained are summarized as follows:
1. Under given hydrothermal conditions, the rate of transformation of organic materials in soda-saline soils as affected by microorganisms is as follows: Bacteria > Actinomycetes > Bacillus > Fungi. Azotobacter and cellulose decomposing bacteria multiplied very rapidly in the presence of added plant materials. They

[Continuation of TURANG XUEBAO No 3, Aug 80 pp 275-283]

were beneficial in the transformation of organic materials and accumulation of nitrogen.
2. The activities of proteinase were promoted by the application of organic materials in soda-saline soil.
3. Various low molecular organic acids, such as formic, acetic, propionic and butyric acids, can be detected in soda-saline soil. The amount of them varied greatly with the history of cultivation and soil management.
4. The amount of water soluble humus, active humic acid and fulvic acid was higher in soda-saline soils in plots with organic materials treatment than in the control plots. These compounds activated soil cations and improved soil properties.
5. Under given hydrothermal conditions the transformation of organic materials in soil affected the composition of soil microorganisms and the physical and chemical properties of the soil as well. Application of organic materials on soda-saline soils reduced the content of water soluble Ca^{++}, Mg^{++}, Na^{+}, HCO_3^- and $CO_3^=$, and increased the available nitrogen, phosphorus and buffer capacity of the soil.

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TITLE: "The Effect of Sodium Humate on the Uptake of Phosphorus from Rock Phosphate by Plants"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 80 pp 284-290

TEXT OF ENGLISH ABSTRACT: The present article reports the effect of humic substances on the availability of rock phosphate to crop growth. Water culture experiments for wheat, tomato and rice were carried out with both ordinary rock phosphate and radioactive rock phosphate as phosphate sources. Experiments showed no evidence that the addition of sodium humate gave beneficial effects on the availability of phosphate from rock phosphate to crop growth. However, the stimulating effect of sodium humate on root growth can be observed in all cases.

9717
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TITLE: "Studies on Resistance of Rice Varieties to the Brown Planthopper"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 133-138

TEXT OF ENGLISH ABSTRACT: In this paper the responses of different rice varieties to different biotypes of the brown planthopper Nilaparvata lugens (Stal) are observed. The survival rate, population build up and honeydew excretion of this insect are also studied.

1) The responses of different rice varieties to various biotypes are not alike. TN_1 is the most susceptible. Mudgo is susceptible to biotype 2. Both ASD_7 and IR_{36} are susceptible to biotype 3, but resistant to biotype 1 and biotype 2. Rathu Heenati, Babawee, 26376 and 25639 are resistant to all biotypes.
2) The interactions between the brown planthopper (BPH) and the host plants show that the survival rate of BPH nymphs on the susceptible varieties is significantly greater than that on the resistant varieties. Few nymphs survive on resistant varieties, such as Rathu Heenati, Babawee, 26367 and Ptb_{33}. It is noted that the survival rate of biotype 2 is higher on Mudgo and lower on ASD_7; the reverse is true for biotype 3.

[Continuation of ZHIWU BAOHU XUEBAO No 3, Sep 80 pp 133-138]

The female weight of BPH is heavier on TN_1 than on either ASD_7 or Mudgo. On Mudgo, biotype 2 weighs heavier than biotype 3; on ASD_7 it is just the opposite.
3) The effect of different varieties on nymphal development is shown by the fact that Mudgo supports a larger population of biotype 2, while ASD_7 supports a larger population of biotype 3. The development of the nymph is worse on resistant varieties, such as biotype 2 on ASD_7 or biotype 3 on Mudgo. The TN_1 can support a larger population and has a better development for all biotypes.
4) The population build up of BPH on the susceptible varieties, such as TN_1, Mudgo (for biotype 2) and ASD_7 (for biotype 3), is significantly higher than that on the resistant varieties. The susceptible varieties can support a larger population.
5) The heaviest honeydew is excreted by the BPH biotype fed on the susceptible varieties, such as TN_1, Mudgo (for biotype 2), or ASD_7 (for biotype 3). The area (mm^2) or color intensity (mm) of honeydew responses by ninhydrin on the susceptible varieties is greater than that on the resistant ones.

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TITLE: "Studies on the Biology of the Diamondback Moth: Observations on Behavior"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 139-144

EXCERPT FROM ENGLISH ABSTRACT: In conjunction with studies made on the life history of the diamondback moth, Plutella xylostella L., in Hangzhou, 1973-1974, a series of observations were made on the behavior of the larvae and adults, both in the laboratory and outdoors.

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TITLE: "On the Problem of Cotton Insect Pests on Hainan Island and the Integrated Control Program Against Them"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 145-152

TEXT OF ENGLISH ABSTRACT: The occurrence, distribution and damage caused by 55 species of cotton insects on Hainan Island are recorded. According to natural conditions of Hainan Island, three cotton growing districts of Qiongshan, Dongfang and Ya County are classified as cotton agricultural ecosystems.

A general survey is made on the above three growing districts and the occurrence of the major cotton insect pests. There are various reasons for the fluctuations of cotton insects on the island, chiefly: 1) change of various climatic factors, 2) change of the geographical environments, including results due to agricultural practices. Discussions are made on the following factors, such as climate, cultural practices, alternate hosts, natural enemies and chemical control, as well as the relationship between such factors and insect populations. An integrated control program is proposed based on the analysis of the natural conditions and the occurrence of the insect populations.

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TITLE: "Improved Technique for Mass Rearing of Rice Moth"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 153-158

TEXT OF ENGLISH ABSTRACT: Eggs of the rice moth, Corcyra cephalonica, have been used in the mass production of Trichogramma spp. and Chrysopa spp. Some improvements in the mass rearing technique of the rice moth are reported in this paper.

When wheat bran mixtures in trays were used as larval food and infested directly with moth eggs, 11-24 percent more moths were produced than using the previous technique in shich a small portion of the wheat bran mixture was first infested in a glass jar and 10 days later the developing larvae were transferred to and reared in trays. Thirty-one percent more moths were produced when the moth eggs were increased from 3,000 to 4,000 per kg of food. Covering the eggs with a thin layer of food after infestation was found to produce 14.5 percent more moths than did not covering them. Rearing rice moths in trays with larval food containing 90 percent

[Continuation of ZHIWU BAOHU XUEBAO No 3, Sep 80 pp 153-158]

wheat bran and 10 percent wheat flour (or flour of corn, sorghum, sweet potato) or 5 percent flour and 5 percent ground soybean cake obtained the following results: rate of adult emergence 56-62 percent, percentage of female moths 54-60 percent, eggs deposited per female 126-141, number of moths obtained per kg of food 1,692-1,880, number of eggs obtained per kg of food 130,000-148,000.

The various bran mixtures used in rearing rice moths not only affected the production of the moths, but also the sex ratio, egg production per female and rate of development. Thus the total number of eggs obtained per kg of food used in rearing has been accepted as a better criterion in the evaluation of the different foods.

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TITLE: "Studies on the Interior Seed Borne Verticillium of Cotton"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 159-164

TEXT OF ENGLISH ABSTRACT: In 1964-1966, we isolated 11,505 seeds from well-developed, but not yet dehisced, cotton bolls near the lower main axis which were severely infected by Verticillium. The rate of interior seed borne Verticillium for three years was <0.026 percent on the average. Isolating each part of the above bolls systematically, the comparative rate carrying the fungus was: boll stipes> boll receptacles placentas.

Concerning the interior seed borne Verticillium in the dehisced bolls, the following results were obtained: From 1,557 matured seeds with about 5 percent exterior (lint) seed borne Verticillium collected from Liaoning Province in 1964, no micro-sclerotia colonies were obtained. In 1966, 4,049 matured seeds were collected strictly from the dehisced bolls in Beijing and isolated; only one delinted and under-developed seed gave a micro-sclerotial colony, the percentage of interior

[Continuation of ZHIWU BAOHU XUEBAO No 3, Sep 80 pp 159-164]

seed borne fungus being 0.025 percent.

By artificial field inoculation with concentrated Verticillium spore suspension to the cavity of bolls just beginning to dehisce, it was found that the intensity of interior seed borne fungus of Verticillium was around 0.9-2.4 percent. By injection with the same spore suspension to the unripened bolls, we obtained rates of interior seed borne Verticillium as high as 10.4-70.4 percent. By spraying the inoculation and then covering the bolls to maintain the humidity for one to two days for the newly opening bolls, no interior seed borne fungus was found after isolation. These experiments indicate that in cases of sufficient inoculum under conditions of optimum nutrition, temperature and humidity, the invasion of the pathogen, not through the vascular bundles, was able to induce a high perdentage of interior seed borne fungus.

According to the results of these experiments it was concluded that the pathogen of Verticillium wilt under natural conditions mainly attaches to the lints of cotton seeds. The percentage of interior seed borne Verticillium is very low. The cotton seeds as collected from the normally dehisced bolls on healthy or slightly diseased plants were basically internally free from the pathogen of Verticillium wilt.

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TITLE: "Studies on the Cotton Wilt Caused by Fusarium oxysporum F. vasinfectum and Its Control"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 165-170

TEXT OF ENGLISH ABSTRACT: The incidence of cotton wilt in the vicinity of Beijing generally reaches 10-30 percent and in certain cases up to 50 percent. In field observations it was found that the disease began to appear when the average temperature rose to 20°C, reached its peak at about 24°C and began to decrease when the temperature rose above 28°C. The cotton plants were infected throughout the growth period, however, with the most abundant disease development occurring at the time of boll formation. When the infested soil was in the presence of an unidentified nematode, the disease incidence was significantly increased. In the field plot where only Fusarium culture was inoculated, the percentage of diseased plants was 51.5 percent. However, when both the Fusarium culture and the nematodes were inoculated, the percentage of infection increased up to 65.6 percent. It was determined

[Continuation of ZHIWU BAOHU XUEBAO No 3, Sep 80 pp 165-170]

that the cotton variety Shaan 721 was highly resistant to the Fusarium wilt with disease indices 0.6-4.8, while the susceptible control variety Xuzhou 1818 showed disease indices of 31.5-35.4. Treating the infested soil with nematocides in mixture with fungicides resulted in the most satisfactory control. A practice of a three to four year crop rotation of cotton with wheat, corn or paddy rice reduced the disease incidence nearly 95 percent.

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TITLE: "Study of Method for Detecting Cotton Seed Borne Fusarium Wilt Fungus"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 171-176

TEXT OF ENGLISH ABSTRACT: Cotton seeds are agents for long distance dissemination of cotton wilt. The seed borne rate of Fusarium wilt is about 0.01 percent to 46.8 percent. The pathogens attack the seed-coat, cotyledon and embryo. Among the seed-borne fungi, Fusarium semitectum B. & R., F. equiseti (Carda) Sacc., F. moniliforme Shel., F. solani (mart.) Sacc. and others, may be isolated. These isolates usually indicate the detection of F. oxysporum f. sp. A selective medium for examining the cotton seed was formulated. It is composed of 1 g methyl cellulose, 1 g KH_2PO_4, 5 g peptone, 0.5 g $MgSO_4 \cdot 7H_2O$, 0.2 g $K_2S_2O_5$, 0.6 g KCl, 0.3 g NH_4NO_3, 0.1 g pentachloronitrobenzene, 20 g sucrose, 0.1 g streptomycin sulfate, 20 g agar, 1,000 ml distilled water. This medium has successfully been used on detecting cotton wilt fungus according to the selective differential pigment and

[Continuation of ZHIWU BAOHU XUEBAO No 3, Sep 80 pp 171-176]

morphological characteristics of the colony of Fusarium oxysporum f. sp. vasinfectum.

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TITLE: "Study of Witches' Broom on Paulownia"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 177-182

TEXT OF ENGLISH ABSTRACT: Witches' broom on Paulownia is one of the most serious diseases in China. In heavily infected affected areas, more than 80 percent of the cultivated trees were infected. Axillary buds proliferate and produce many secondary and tertiary shoots which are covered with small yellow leaves. The flowers become phylloid. Branches and shoots of infected trees usually showed dieback in the current year which may have affected its growth rate in the following years.

Typical symptoms appear on a healthy seedling when graft-inoculation with diseased barks is carried out. Mycoplasma-like bodies could be seen in the several elements of phloem tissue under electron microscope. The unit-membrane of MLO is 10 nm thick and 200-820 nm in diameter. It is spherical and ellipsoidal. Most of the seedlings derived from the diseased root-cutting are able to produce witches' broom. The disease could not be transmitted by sap inoculation or through seed.

Diseased root-cuttings should be dipped in hot water between 40°C and 50°C for

[Continuation of ZHIWU BAOHU XUEBAO No 3, Sep 80 pp 177-182]

30 minutes, or in 1000 ppm tetracycline in water before planting. These methods can effectively control the disease for several years. An injection of 10,000 ppm of tetracycline in water or 5 percent sodium borate into the diseased trunk or soaking its root will reduce the development of the disease to some extent.

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TITLE: "Occurrence and Diminishing Law of Major Field Weeds in Shanghai"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 183-190

TEXT OF ENGLISH ABSTRACT: During 1972-1979, we made some investigations and studies on the biological and ecological characteristics of the main field weeds in Shanghai. After surveying the natural occurrence of 189 kinds of main field weeds, the following four occurring types are suggested: the early spring type, spring-summer type, autumn-winter type and spring-autumn type, with Chenopodium album L., Digitaria sanguinalis (L.) Scop. and Echinochloa crus-galli (L.) Beauv., Alopecurus aequalis Sobol., as well as Chenopodium serotinum L., as their representatives respectively. At the same time, we made it clear that in different years, under different crops and cultivation conditions, as a result of variation in environmental conditions, there remain some differences in the occurrence of weeds. Grasping the law of the occurrence of weeds and the characteristics of their growth and development, we are able to provide certain theoretical evidence for the control of weeds and for the rational and timely application of herbicides.

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TITLE: "Studies on the Degradation of Dimethoate in Tea Shoots"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 3, Sep 80 pp 191-196 and inside back cover

EXCERPTS FROM ENGLISH ABSTRACT: Dimethoate has been widely used for the control of tea pests such as jassids, aphids and thrips, etc. The present paper deals with the studies on the degradation of dimethoate and dimethoxon in tea shoots.

According to the results of the experiment, it is concluded that under natural field conditions, dimethoate degrades moderately on the fresh tea shoots.

The authors recommend that the tolerance residue limits in the tea may be established as 1 ppm (expressed as the sum of dimethoate and dimethoxon). According to this, the residue of dimethoate and dimethoxon in the tea manufactured by tea shoots sprayed with 40 percent dimethoate EC at a dilute of 800 and 1600 may be decreased to less than 1 ppm after 7 days and 5 days after the application. However, due to the tiants of dimethoate to the tea, the authors recommend that the

[Continuation of ZHIWU BAOHU XUEBAO No 3, Sep 80 pp 191-196, inside back cover]

safety intervals should be delayed to 7 days (40 percent EC 2000 dilute solution) and 10 days (40 percent EC 1000 dilute solution).

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END

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19 November 1980

China Report

AGRICULTURE

No. 111

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CHINA REPORT

AGRICULTURE

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I. GENERAL INFORMATION

BETTER FINANCIAL MANAGEMENT FOR STATE FARMS ADVOCATED

Beijing CAIZHENG [FINANCE] in Chinese No 5, 5 May 80 pp 1-4

[Article by Jiang Dongping [3068 2639 1627]: "Conscientiously Strengthen Management of Financial Affairs, Promote Farms, Reverse Losses, and Increase Profits"]

[Text] In paying the utmost attention to the development of state farms during the past year, the Party Central Committee and the State Council have provided a great deal of significant guidance and have requested state farms to perform independent accounting and assume sole responsibility for profits and losses. In December 1978, in the draft of the "Resolution of the CCP Central Committee Concerning Certain Problems Affecting Acceleration of Agricultural Development," passed by the Third Plenary Session of the 11th Party Central Committee, it was pointed out that farms which presently are still incurring losses must turn such losses into profits within a fixed period, and that prior to 1985, state farm profits need not be handed over to higher authorities. In order to implement the spirit of this resolution, the State Farms and Land Reclamation Main Bureau and the Ministry of Finance drafted the "Provisional Regulations Concerning the Practice of Assuming Responsibility for Financial Affairs by Farm and Reclamation Enterprises." This was reported to and approved by the State Council, and in February of this year it was promulgated to all locations for implementation as State Council Directive No 55 (1979). During the past year, the broad masses of cadres, staff and workers of the state farms, inspired by the spirit of the Third Plenary Session, carried out the Central Committee's "eight-character point policy" for readjustment of the domestic economy and the resolution for acceleration of farm development. By practicing the method of assuming responsibility for financial affairs, they realized gratifying accomplishments in increasing production while increasing revenues. In 1979, total output of grain by state farms nationwide [quanguo nongchang] reached 14.1 billion jin, an increase of 11 percent over last year. Total cotton output was 1.61 million dan, an 8-percent increase over last year. As for financial matters, there was an increase in the number of enterprises which made a profit, and a decrease in those which suffered loss. The profit-loss balance was in favor of profits in the amount of 200 million yuan, and a beginning was made in reversing the passive situation which had gone on for 13 years, wherein state farms continually suffered losses. Of course, the situation is not balanced regionally, and there are still losses in some districts.

This year 1980 is an important year for the readjustment of the domestic economy, with farms having quite favorable circumstances and, on the basis of accomplishments already realized, going a step farther in grasping well the changing of the points

of emphasis in their work, and carrying out the tasks of readjustment, restructuring, rectification and improvement [of agriculture]. They will thoroughly develop the movement to increase production while practicing economy. The state raised the purchase price of some agricultural byproducts, readjusted wages of some staff and workers and readjusted regional wage categories, and implemented grain allowances for staff and workers. All of these measures aroused the enthusiasm of the broad masses of staff and workers and promoted the reversing of losses and increasing of profits on the farms. This year, according to the state plan, the various production targets for state farms nationwide are being increased at a comparatively greater rate than last year's. In order to promote the realization of this plan and go a step farther in reversing losses while increasing profits, finance departments at various locations should exert their utmost efforts to act in conjunction with departments responsible for the work and conscientiously carry out the following several tasks:

I. Support farms in changing production conditions and use funds for the key link of increased production

Since the founding of the nation, there has been a great development of state farm and land reclamation enterprises. At the present time there are 2,714 state farms nationwide, with staff and workers numbering 5.06 million. There are 65 million mu of cultivated land area and more than 11 million mu of rubber, fruit and mulberry trees and tea. The farms possess 44,000 tractors, each of which has an average cultivation assignment of 1,432 mu; of this set criterion, 84 percent has already been completed. They possess 13,800 combines, each of which has an average cultivated land assignment of 4,565 mu; of this set criterion, 82 percent has already been completed. There are 17,000 agricultural vehicles, each of which has an average cultivated land assignment of 3,705 mu; of this set criterion, 94 percent has already been completed. Total mechanical motive power is 7.18 million horsepower, and the level of agricultural mechanization, a major project, has reached approximately 80 percent. For 30 years they have supplied the majority of grain and beans and other livestock products, making a positive contribution to the nation. The loss situation at present continues to be fairly serious, however, with the yield consistently fluctuating at around 200 jin per mu, and half of the enterprises are still suffering losses. This kind of circumstance is quite inappropriate for realizing the four modernizations.

There are many causes for the low production and losses of the farms, chief among which were the interference and damage wrought by the ultraleftist line of Lin Biao and the "gang of four." But looking at production conditions, it can be seen that another important cause is the small number of fields with high, stable yields. At present, state farms nationwide are attempting to ensuring stable yields despite drought or excessive rain, but there are only somewhat over 5 million mu of fields with high and stable yields, comprising only 8 percent of land under cultivation; this is far, far below the level of 22 percent reached by the rural people's commune and brigades nationwide. The grain production from the cultivated land in the Heilongjiang reclamation area comprises one-half of the total grain production from cultivated land on state farms nationwide. Although there has been an initial resolution of drainage problems in that area, and although agricultural mechanization has been basically realized, so that stable yields might be ensured despite drought or excessive rain, there are only somewhat more than 200,000 mu of fields with high,

stable yields, comprising less than 1 percent of the land under cultivation. Owing to poor water conservancy and irrigation conditions, production volume remains low and unstable, and the changing production situation during the past 10 years has shown this problem clearly. In 1967, each tractor was assigned the cultivation of 3,250 mu. Two jin and 8 liang of chemical fertilizer were applied on each mu of land and, due to good weather for the crops, production of grain and beans reached 226 jin per mu. In 1978, the cultivation assignment of each tractor had diminished to 2,693 mu, while the amount of chemical fertilizer applied to each mu increased to 22.5 jin. Due to continuous drought, the great majority of farmland had no water for irrigation, and production of grain and beans fell to 205 jin per mu. In summing up many years of practical production experience, they stated that the key link in realizing high and stable yields is resolving the drainage and irrigation of cultivated land. Wherever emphasis is placed on the problem of water conservancy and the task of water conservancy construction for farmland is taken in hand, the achievement of increased production and revenues is always realized. Presently many comrades have come to understand that the building of modernization by the farms not only requires mechanization, extensive use of agricultural chemicals and electrification, but also requires fields with high and stable yields and realization of water conservation.

The conditions are favorable for state farms [guoying nongchang] to carry out water conservation construction. Based on analysis of relevant data, most of our nation's farms are in hilly regions, near streams or adjacent to rivers or lakes, and water resources are abundant, although the present utilization rate is very low. For example, the total runoff [of water] in the Heilongjiang reclamation area is 15 billion cubic [meters], of which only 400 million cubic [meters] are used at present; thus, the utilization rate falls below 3 percent. In the Xinjiang reclamation area the total runoff is 90 billion cubic [meters], of which 8 billion cubic [meters] are used giving a utilization rate of less than 10 percent. Other areas are similar. In order to support farms in quickly changing production conditions, next year the state will arrange to give farms various fund allocations totaling approximately 1.1 billion yuan, of which 230 million will be paid out to small-type farms. Finance departments should assist farms in conscientiously managing and using these funds, arriving at an equitable distribution, and applying [the funds] at key points and guaranteeing success. They first of all should use the funds for supplementary construction and [water conservation] conveyance systems where results will be seen quickly with little cash outlay. As for farm units whose water conservancy conditions are poor, potential for increased production is great, and the spirit of self-reliance is strong, preferential arrangements should be made. We should build at a place and then put it right to use, so as to truly realize the utmost benefits.

To emphasize the problems of supporting farms in water conservancy construction and in managing and using well the funds for farmland water conservancy is to speak in terms of the general situation. But owing to the fact that the farms of our nation are spread over a very wide area, the natural conditions prevailing at various locations will differ widely, and they cannot all be "sliced with one knife." Each place must act according to the actual circumstances at its location, suit measures to local conditions in determining points of emphasis to be supported, and be practical and realistic in resolving the problem of increasing production and revenues.

II. Carry out a program of "one line of work the main concern but other lines carried on simultaneously," and accumulate funds for construction of modernization

In view of the experiences of many places, the farms must seriously implement the policy of "one line of work as the main concern, but engage in other lines," simultaneously grasp well the production of grain and cotton, suit measures to local conditions in developing forestry, animal husbandry and fisheries, moreover fully utilize local resources in establishing sideline occupations which require low capitalization and show quick results with large earnings and take the road of agricultural-industrial-commercial complexes. This is an important means by which production and revenues are increased and funds for modernization construction are raised.

In the 30 years since the founding of the nation, there has been a gradual development of farm-run sideline occupations accompanying the development of [state] farms and land reclamation. Nationwide, by the end of 1978 there were a total of 6,023 farm-run sideline occupations with 670,000 staff and workers in more than 20 industries such as farm implements, steel, cement, chemical fertilizer, and food processing. Annual production reached 3.5 billion yuan, which was 48.4 percent of the gross output value for the five occupations. Of this amount, profits comprised 540 million yuan. Owing to the development of farm-run sideline occupations, a group of farms with fairly high output values and profits has already emerged. For example, the gross output value of Lutai farm has reached 21 million yuan, of which sideline occupations accounted for 70 percent, or 14.7 million yuan. Total profits were 5 million yuan, of which sideline occupations accounted for 90 percent, or 4.5 million yuan.

Many farms engage in industry which is centered on agriculture, thus promoting the building of farm modernization. For example, at the Communist Youth Combined Reclamation and Cultivation Farm of Jiangxi, there are fewer than 2,000 staff and workers and fewer than 3,000 mu of cultivated land. In the past, under the "single operation" system, the grain yield was only somewhat over 200 jin per mu, and losses were suffered over a long period. Since 1973, while they were exerting great efforts to develop grain production, and zealously developing farm-run sideline occupations, their development of sideline occupations reversed and then promoted changes in agricultural production conditions and promoted increased grain production. This farm had a total production volume in 1979 of 4.1 million jin, of which more than 1 million jin were handed over to the state. At present many comrades believe that if a farm wants to proceed with building modernization and realize increased production and revenues, it is unsatisfactory not to positively develop farm-run sideline occupations.

For the past few years, although there has been fairly rapid development of farm-run sideline occupations nationwide, several problems remain. There are many comrades who, fearful of being criticized for "not engaging in a proper occupation," don't dare break out of the confines of "single operation," nor do they lift a hand to perform agricultural sideline [occupations]. Although the resources for developing sideline occupations are perfect, they don't dare use them. There are some places where the production program is not clear, the overall arrangement is not rational, enterprise management is confused, and losses and expenses are fairly great. Finance departments should act in cooperation with departments responsible for the

work, summarize experiences in developing farm-run sideline occupations, and eliminate the influence of the ultra-leftist line. Moreover, they should conscientiously aid farms in resolving the following few problems:

1) Make a rational readjustment of the overall arrangement of sideline occupations. At present there are several places where the productive force of farm-run sideline occupations is incapable of effective development, owing to insufficiently rational overall arrangements. For example, in the Heilongjiang reclamation area there are seven chemical fertilizer plants whose designed annual production capability is 104,000 tons but which presently are producing only 48,000 tons. There are 16 agricultural implement plants whose annual production value could reach 80 million yuan; currently they are producing goods worth only 57 million yuan. There are 179 edible-oil processing plants whose annual processing capability is 600,000 tons; at present they are processing only 380,000 tons. There are other areas where similar circumstances prevail to varying degrees. The reason that production at these sideline occupations fails to reach designed capability is chiefly that some of them have been set up too close together and some lack the bare essentials. At present many places are carrying out rectification, and finance departments should assist responsible departments in formulating development plans, in making a rational readjustment of overall arrangements, and in implementing designated-site production. As for those enterprises whose supply of raw materials is not guaranteed, technology is not up to standard, products are unmarketable, and losses are serious, recommendations should be made that they halt production and give up. As for those enterprises whose supply of raw materials is guaranteed and whose production is needed, yet which are still temporarily suffering losses, a recommendation should be made that they halt production for a definite period while rectification is carried out.

2) Expand production of commodities. The majority of farms in our nation have comparatively abundant resources and production conditions for development of commodities. If the work is done well, it will be possible to effect high rates of increase in production value and profits. For example, resources for paper production are especially abundant and, in addition to raw materials in the form of a large amount of uncultivated plant life, approximately 5 million tons of wheat straw and rice straw can be produced annually. The farms can use approximately 2.5 million tons for paper production and still will have used only 5 percent. Currently state farms nationwide [quanguo nongchang] have a labor surplus of approximately 1 million-plus, along with several million dependents of staff and workers. If it would be possible to organize them in initiating multiline operations, developing production of sideline occupations, and tapping new production resources, then a solution would have been found for the labor surplus problem and revenues could be increased as well.

3) Provide needed support with respect to funding. In order to support the development of farm-run sideline occupations, the state has already appropriated 46 million yuan in loans for small-scale technological processes at farm-run sideline occupations. Results have been comparatively remarkable. However, management at some locations has been lax and the phenomena of nonreceipt and slow circulation [of loan money] are occurring. Henceforth, management should be strengthened and vigorous action should be taken to recover the funds, since the more received the more can be disbursed and circulation accelerated. In order to support development

of farm-run sideline occupations, Hunan Province even took part of the monies under provincial control for economic readjustment and appropriated them as circulating funds for farm-run sideline occupations--a move that was welcomed by the farms. Other provinces and regions could consider acting in a like manner at times when small loan quotas are insufficient. Circulating funds for farm-run sideline occupations should be disbursed to those units whose raw materials are guaranteed, for whose products there are markets, whose products can be produced very quickly, and whose level of accumulation [of capital] is comparatively great. This will be even more beneficial for supporting the development of farm-run sideline occupations.

III. Conscientiously implement the practice of assuming responsibility for financial affairs, and improve operational management

In view of the actual circumstances regarding state farms nationwide [quanguo nongchang] during the past year, the implementation of the practice of assuming responsibility for financial affairs to inspire the broad masses of staff and workers at the farms to consciously participate in enterprise management and to use economic methods to effect important measures at state farms [guoying nongchang] have been important elements in the expansion of enterprise autonomy and of the strict economic responsibility system. The initiative of the farms and of the broad staff and workers has truly been brought into play, the development of production has been promoted, and a reversal of losses with increased profits have been encouraged. Responses from various locations indicate that when responsibility for financial affairs is taken on, the previous situation, in which the farms were the same whether managed well or poorly, the same whether operated at a loss or a profit, and in which any losses would be made up, has been changed. It is a good method which combines rights with responsibilities and makes a clear distinction between rewards and punishment. However, owing to the fact that it has been in effect throughout the country less than a year, there are some problems still requiring study and attempts to find solutions under practical conditions. It is hoped that finance departments in various locations will conscientiously sum up experiences so as to further this method along toward perfection. At this time they should pay attention to successfully resolving the following few problems:

1) Provinces and regions should keep a fixed amount of reserves. Our nation is very large, and each year several localities suffer calamities. For example, one province might have regional disasters which occur with varying degrees of severity. The distribution of our farms is very broad, and calamities occur frequently. When arrangements are being made for assumption of specific responsibilities, the situation as a whole must be discussed before it is possible to have "preparedness for averting perils." In order to resolve this problem, the practice of assuming responsibility for financial affairs has stipulated that each province, municipality, and autonomous region will set aside a fixed amount of reserves when arranging quotas for assumption of profit-loss responsibility. These will constitute mandatory reserves of circulating funds for economic readjustment. Last year, however, several provinces and regions did not keep any reserves. It is recommended that this year, when the various provinces, municipalities, and autonomous regions arrange quotas for subordinates, around 15 percent be kept strictly as reserves.

2) Quotas for assumption of responsibility should be put into effect, echelon by echelon. The practice of assuming responsibility for financial affairs stipulates

that prior to 1985, the state will, for state farms [guoying nongchang] and pastures, implement independent accounting in general, self-responsibility for profits and losses, retention of profits for use, and nonreimbursement for losses. For rubber plantations, industries directly subordinate to farm and reclamation departments at various levels, supply and marketing enterprises, and a small number of state farms and pastures whose profits are comparatively large, the state will assume the responsibility for turning over profits to the state. For a small number of state farms and pastures where natural conditions are too deficient and where losses are still being temporarily incurred, the state will, at its discretion, pay compensation during the first or second years in fixed amounts. However, some places speak only of keeping profits for their own use and not of no reimbursement for losses; regardless of the kind of enterprise, these places want to retain their profits, no matter how great, and want the state to reimburse them for any losses which might occur--and never mind asking the reason for those losses. This actually means "enterprises assuming responsibility for profits, and the state assuming responsibility for losses." If this state of affairs does not change, the enterprise economic responsibility system will be weakened in the future. So that the farms will have clearly defined objectives for struggle, each place should determine at the earliest date which enterprises will bear sole responsibility for profits and losses, which will assume responsibility for turning profits over to the state, and which will temporarily receive a fixed compensation. It is mandatory that a set period be established within which losses are to be turned into profits; this will facilitate their adopting effective measures and striving hard to achieve and surpass their missions.

3) Arrangements should be made for proper utilization of and responsibility for surplus cash. Last year the majority of the farms exceeded the requirements of their missions for assuming responsibility for financial affairs; they were able to assume responsibility for surplus cash in the amount of 350 million yuan. In utilizing these funds, adherence should be made to the principle of "proposals first, then expenditure," and there must not be "anticipation of future income." Most important is the use of these monies as production development funds, applied toward technological production processes. Part of these monies can be used as a fund for awards for staff and workers and for setting up collective welfare facilities and bonus payments. At the same time, it is necessary to set aside a suitable reserve fund for use in making up deficiencies with surpluses. This reserve must be set aside. As to which of the three types of funds is to constitute the largest proportionally, it is hoped that each location will hold discussions on its own and make this determination, based on the overall situation locally. Regarding the situation of assuming responsibility for utilization of surplus cash, finance departments should proceed with the necessary leadership and supervision.

4) A further step should be taken to improve operational management. The practice of assuming responsibility for financial affairs sets forth the following: "The key link in determining whether or not responsibility can be borne for financial affairs is the leadership of the party committees and the making of major efforts for carrying our production and improving operational management." For the past year, under the leadership of party committees at various levels, the majority of farms have realized great achievements in the areas of production development and improved operational management. However, there are still a small number of units which do not care about economic accounting, whose operational management is fairly confused, and whose losses and expenditures are fairly serious. Finance departments should take the initiative to help farms adopt effective measures; open up widespread accounting by teams; strictly control wages, materials, and various types of expenditures; reduce payments not of a production nature; and vigorously lower prices. If prices can be reduced by 3 percent for each 100 yuan of production value, state farms nationwide [quanguo nongchang] can save more than 200 million yuan. If our work is done well, state farms nationwide this year will be able to achieve even better results in management.

9420
CSO: 4007

NEW HIGH-YIELD WINTER WHEAT VARIETY TESTS WELL

Beijing RENMIN RIBAO in Chinese 22 Aug 80 p 2

[Article by Li Dengchun [2621 4098 2504] and Li Chunhua [2621 2504 5478] of the Crop Institute of the Chinese Agricultural Science Academy: "A New Variety of High-Yielding Winter Wheat--'Jian-26'"]

[Text] "Jian-26" is a new winter wheat variety successfully bred by the Chinese Agricultural Science Academy's Crop Institute in 1976. In recent years it has demonstrated resistance to lodging and disease, good yellowing, and high yields in variety comparison tests, regional experiments, large area demonstrations, and inoculation evaluations. It has won the attention of agricultural production departments and has been included as a demonstration variety for popularization by the Agriculture Ministry.

This variety has larger rectangular spikes, the awns are long, the husks are white, and the grains are red. Each spike has 30 to 40 grains. The plant is shorter than 100 centimeters. The stem is pliable and strong and is highly resistant to lodging. Its protein content is about 13 percent. Its heading time is 1 or 2 days earlier than the control variety "nongda 139." The Chinese Agricultural Science Academy tested the grown plants in a variety comparison test in 1979, and its inoculation was evaluated in a regional experiment in Beijing municipality. Both [tests] showed that the variety is immune to tiaozhong 19 and tiaozhong 20 physiological forms of stripe rust disease, is slightly susceptible to the tiaozhong 17, tiaozhong 18, and tiaozhong 21 physiological forms of stripe rust disease, and is relatively resistant to leaf rust disease.

"Jian-26" manifested safe wintering and a higher yield than the control variety in the 1976-1977 cold damage experiment. In 1978, the variety led others in comparison tests of high-fertilization varieties conducted by the Agricultural Science Academy. The Zhaogezhuang Brigade of Xiji Commune in Tongxian planted it sparsely sown on 1 mu of an experimental field. Some 70,000 basic seedlings were planted. Each mu produced 430,000 spikes, each spike had 39 grains, the thousand grain weight was 39.4 grams, the yield was 1,051 jin per mu, and the potential for increased yield was great. In 1979, it took first place in the joint regional experiment of the high fertilization group in Beijing Municipality; the unit yield ranged from 514 to 691.6 jin. In the same year, Chengguan Commune in Tongxian planted 20 mu of this variety, and the average per mu yield was 751 jin. This variety performed well even under severe cold and low temperature conditions that lasted from last winter to this spring. At the Xiguan Brigade in Changping County, the average yield was 650 jin per mu. At the Langfang Regional Agricultural School in Hebei, the per mu yield was 780 jin (Note: This year in the Beijing area, the yield of wheat generally dropped about 30 percent because of autumn drought and winter cold). It is estimated that this variety can be sown on about 100,000 mu of land this autumn in the Beijing suburbs. This variety is also suited for planting in wheatfields that have above-average fertility in the north-central part of Hebei Province and the central and southeastern parts of Shanxi Province.

9296
CSO: 4007

NEW COTTON VARIETIES SUQI NO 1, ZHENGMIAN NO 1 INTRODUCED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 1, 15 Jan 80 p 21

[Article by Yuan Yibao [5913 5030 1405] of the Jiangsu Provincial Qidong County Seed Company and Huang Chunsheng [7806 2504 3932] of the Hebei Provincial Zhengding County Seed Company: "Introduction to New Cotton Varieties; Suqi No 1, Zhengmian No 1"]

[Text] Suqi No 1 is a variety systematically and selectively bred from the Jiangsu mian 203 by the May 7 Farm of Qidong County in Jiangsu Province. The farm test planted Jiangsu mian 203 in 1971, and at the same time, selected superior single plants and planted them in rows in the nursery the second year. At the end of the year, they were moved to Hainan Island for propagation in nurseries for plant lines. In the third year they were planted in original variety nurseries to produce original varieties. Through test planting, the variety yielded large cotton bolls, high yields and good quality. In 1976, it was named the 203 superior line by the county's bureau of agriculture as a successor variety for popularization. Purification and restoration work began and in 1978 by mutual agreement between the provincial and regional agricultural departments, it was named Suqi No 1.

Characteristics: The plant type is clustered, the stem is thick and strong, the leaves are small, the grooves are deeper, the leaves are lighter in color (during the seedling and flower bud periods, the leaves are yellowish green). The boll is oval in shape, the single boll weighs about 5.5 grams. The surface of the boll is smooth, the stem of the boll is long, the down is 30 to 31 millimeters long, the cloth content is about 41 percent. The seed index is 10 grams, and the cloth index is 7 grams. It is a slightly early medium maturing dryland cotton variety. Its growth period is about 120 days. It is suitable for companion planting with wheat. Germination is earlier than that of Delta Pine cotton No 15 by 3 to 4 days. The pericarp of the cotton boll is thin and the boll opens easily. However, during the latter period, growth is weak. When high temperatures and dryness are encountered during the flowering and boll forming period, timely application of fertilizers and irrigation are needed to prevent the yield and quality from being affected.

Bumper harvests and superior quality: The farm test planted this variety in 1973 and 1974. The weight of the single boll was heavier than that of Delta Pine cotton No 15 by 0.3 to 0.5 grams, the cloth content was higher by 0.5 to 1.7 percent, the length of the fibers was over 30 millimeters, and the increase in yield

was from 6.7 to 15.4 percent. In 1975, it was planted at four production teams for comparison with Delta Pine cotton No 15 planted at four neighboring production teams. Suqi No 1 produced a per mu increase of 12.22 percent in yield. The cloth content was higher by 0.24 percent, the length of the down was longer by 0.77 millimeters, the number of first to third grade flowers was higher by 8.2 percent, and the unit price for seed cotton (dan) was more by 2.16 yuan. In 1978, 87,200 mu were planted throughout the county. We surveyed 26 production teams in four communes. Suqi No 1 produced a per mu increase of 11.76 percent more than Delta Pine cotton. The percentage of cloth content was higher by 2.4 percent, the length of down was longer by 0.2 millimeters, and the unit price of seed cotton increased 3.67 yuan. The cotton farmers at each locality were pleased. In 1979, over 430,000 mu were planted throughout the county.

Quality of fibers: In 1975, the Third Cotton Weaving Plant of Nantong in Jiangsu Province evaluated the fibers of Suqi No 1 and concluded that the length of the fibers, the strength of the single fiber and the maturity of the fiber and such major indicators were all superior than those of Delta Pine Cotton No 15.

Key Measures of Cultivation: The growth trend of Suqi No 1 during the seedling and flower bud periods is strong, but the color of the leaves is relatively light. Therefore, fertilizers for the seedlings must be lightly applied and fertilizers for the flower buds must be strategically applied, mainly using organic fertilizers. Because the variety has a stronger boll forming characteristic, and the emergence of the flower buds and flowering are more concentrated, therefore management of fertilization and irrigation during the flower boll period must be intensified. Application of fertilizers for the flower bolls should be earlier than that for Delta Pine Cotton by 3 to 5 days. During the latter period of growth, the growth trend is weak, and the plants easily withers, thus topping fertilizers should be applied well according to the conditions of the seedlings. When it is dry, sufficient water must be sprayed to facilitate the increase of the bolls of the upper part and to develop the potential of the superior variety to produce increased yields.

The science and technology group of the Anxia Brigade of Zhengding County in Hebei Province selected eight superior variant single plants of bare leaf Delta cotton in 1969 and after years of selective breeding, selected the Zi xuan No 3 in 1972. In 1977, it was officially named Zheng mian No 1 by the county committee of Zhengding County.

Characteristics: The plant type is loose, the plant height is 90 to 100 centimeters. The stem is thick and strong and has a small amount of down. The first fruiting branch grows between the 6th and the 8th nodes. The fruiting branches at the bottom part are shorter, and fruiting nodes are distributed evenly. The leaf is medium and slightly small, light permeability is good, the leaves are light green during the early growth period and deep green during the latter growth period. Growth is prosperous during the middle and latter growth periods. More bolls are formed on the middle and upper parts. The boll is egg shaped, larger, most of the bolls have four capsules. The single boll weighs 5.5 grams. The pericarp of the cotton boll is smooth and thin, and it constitutes about 24.7 percent of the total weight of the boll. The tip of the boll has a shallow opening, the stem of the boll is relatively short and thick. The crown of the flower is larger, the pollen is yellow and developed. The stigma of the pistil is relatively

long, longer than the stamen by 3 to 5 millimeters. The bolls open easily and are concentrated. The cotton is easily picked. The cloth content is about 40 percent, the length of the down is about 31 millimeters, the color of the ginned cotton is white and silky, the fibers are uniform, and quality is good. The seed index is 11 grams and the cloth index is 7 grams. There are few bearing seeds and nonbearing seeds. Each capsule bears an average of 7.14 seeds, the percentage of sterile seeds is 3.1 percent, or 0.23 percent by weight, less than that of Delta Cotton No 16. The seeds are grayish white. The growth period is 140 to 145 days, and it is a medium maturing variety. The time from the emergence of flower bud to flowering lasts 25.7 days, flowering to opening of the boll lasts 62.4 days. It has a strong adaptability and resistance to adversity. Over the years, the cloth content and the length of the down have all remained relatively stable and the variety is tolerant to verticillium wilt.

Its boll forming characteristic is slightly poorer and the plants easily grow profusely when heavy rain falls during the bud and flower periods. The flesh of the leaves is relatively thin and resistance to aphids and spider mite is poor.

Yields: Since 1971, it has been compared to 78 varieties or new lines in the province and elsewhere. Its yield of ginned cotton has always been high. Beginning in 1976, it was part of the cotton regional experiment in Hebei Province for 3 years, and the per mu yield of ginned cotton was always the highest. Compared to the original control variety, Ji han No 5, it produced an increase of 11.9 percent in yield the first year, 6.3 percent increase in yield the second year, 23.1 percent increase in yield the third year, and the 3-year average increase was 13.8 percent. Beginning in 1977, it was part of the regional experiment of varieties resistant to verticillium wilt in Hebei Province for 2 years. In the first year the yield of ginned cotton was 124.4 jin, an increase of 14.6 percent in yield over that of the control Delta No 16 and was the highest of the 10 varieties tested. In the second year its average per mu yield of ginned cotton was 111.7 jin, an increase of 37.6 percent in yield, the second highest among the five varieties and lines. The 2-year average increase in yield was 26.7 percent. Beginning in 1977, it was part of the regional experiment of cotton varieties in the Huang Jiang valley for 2 years. The results of the comprehensive experiments of 35 test points showed an average per mu yield of 154.6 jin, an average increase of 27.9 percent in yield over that of the original control varieties Xuzhou 1818, Jingan Delta 15, and Shaan 401, or the second highest. The highest yield was realized in 1978 at the Shaanxi Dali Farm. The per mu yield of ginned cotton was 285.9 jin. In 1978, in the regional experiment of cotton varieties in the Yuncheng region in Shanxi, the yields at eight test points averaged a per mu yield of 207.7 jin of ginned cotton, an increase of 31.5 percent in yield over the control Delta No 16, first among the 11 new varieties.

Key Measures of Cultivation:

The variety was cultivated in relatively infertile soil and it is more tolerant to infertility. It can be planted in fields of ordinary fertility. The plants grow more prosperously after emergence of the flower bud. Its boll forming characteristic is strong. Opening of the boll is concentrated. It matures relatively early. Therefore, after the emergence of flower buds, attention must be paid to deep intertilling to prevent profuse growth. Sidedressings should be applied appropriately early and topping fertilizers should be applied early, and the branches should be trimmed early so that more bolls will form during the flowering period.

Seedlings should not be planted too densely (this variety's plant type is relatively tall), generally it is better to plant 5,000 plants per mu. The row distance should be appropriately widened to facilitate permeation of wind and light. During the seedling period the color of the leaves is relatively light and photosynthesis is weak. Fertilizers for the seedlings can be appropriately applied. But an over abundance of nitrogen fertilizers during the growth period of cotton will cause the cloth content to drop, therefore, the standard for fertilization is 50 jin per mu (not including base manure), but not too much. The variety's leaves are thin, its resistance to cotton aphids and spider mite is relatively poor and attention must be paid to their prevention and control in time.

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CSO: 4007

SOYBEAN VARIETIES HEI NONG 16, HEI NONG 26 INTRODUCED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 1, 15 Jan 80 p 20

[Article by the Soybean Research Institute of the Heilongjiang Academy of Agricultural Sciences: "Soybean Varieties Hei Nong 16, Hei Nong 26"]

[Text] Hei Nong 16

Origin of the Variety

Our institute's breeding group used gamma rays of 10,000 roentgens of cobalt^{60} to treat the second generation offspring of the hybrid of Wu ding zhu as female parent and Jing zhan bu as male parent and bred Hei nong 16 from a selection of single plants. In spring of 1971, it was reviewed at the conference of regional experiments in Heilongjiang Province and chosen for popularization in the Songhuajiang region, Suihua region and the Mudanjiang region.

Characteristics

The plant height is 80 to 90 centimeters. The plant has two to three branches, the main stem is developed, the plant type is clustered, the internodes are short, and there are more nodes. The distribution of pods on the main stem and the branches is even, three to four pods grow on each node, and there are many pods with three to four beans. The flowers are white, the leaves are lanceolate, the down is grayish white. It has a habit of unlimited formation of pods. The seeds are nearly round, the seed coat is yellow, shiny, the mealy part is light brown, the weight of 100 beans is 18 to 20 grams, the quality is superior. Oil content is 22.64 percent and the protein content is 36.85 percent. The medium maturing variety requires 120 days from the time of budding to maturation. The stem is strong, has elasticity, and does not lodge. It has a stronger resistance to aridity, it is tolerant to mild salinity and alkalinity and its adaptability is wide. Its requirement for soil fertility is not strict. It possesses a definite tolerance to shade, it is suitable for interplanting with corn. Its plants are tall, its stems are strong and do not lodge. Pods are formed densely, and its yield is higher than other varieties. From 1968 to 1970, it was tested in regional experiments at 36 localities including experimental stations of key farms and in the Songhuajiang and Suihua regions. Average per mu yield was 285.2 jin, the highest per mu yield was 491.7 jin, averaging an increased yield of 11.3 percent over the control varieties Dong nong No 4 and Hei nong No 5. In 3 years under different climatic conditions, it produced increased yields in all cases.

In 1975, the first production team of the 51 Brigade of Xinhua Commune in Suihua County planted 105 mu and the average per mu yield was 431 jin. In 1973 and 1974, the agricultural science institute of the Songhuajiang region organized seven liaison points and conducted an experiment of interplanting 36 varieties of soybeans with corn. At seven test points, the yield of Hei nong 16 variety interplanted with corn in a 6:6 ratio produced one of the three highest yields, averaging a per mu yield of 295.2 jin.

Key Point of Cultivation

It is suitable for planting in the central and southern regions of Heilongjiang Province. It is also suitable for planting in slightly alkaline and saline regions in Anda County. Up to 1978, the planting area has reached over 2,500,000 mu. The number of seedlings preserved per mu was 16,000 to 18,000 plants. For cleaning seeds in fertile fields, the number of seedlings preserved per mu was 16,000 plants. For cleaning seeds in medium fertile soil, the number of seedlings preserved per mu should be 20,000 plants.

Hei Nong 26

Origin of Variety

Our institute's breeding group bred this variety from Ha 63-2294 which is an early maturing mutant from radiation treatment used as the female parent and the subvariety Xiao jin huang No 1 of limited pod forming habit as the male parent in 1965. In the spring of 1975, it was chosen at the conference of regional experiments in Heilongjiang Province for popularization in the Songhuajiang region.

Characteristics

The plant is tall and large, the plant height is generally 90 to 110 centimeters, branches are few and there are many nodes on the main stem. Pods are concentrated on the main stem, there are many pods with three to four beans and the percentage of pods with four beans is high. The leaves are lanceolate, relatively narrow and small, and the angle between the stems of the leaves and the main stem is relatively small. During the latter period of growth, permeation by wind and light is good. It is suitable for dense planting and machine harvesting. The down is grayish white. It possesses the character of unlimited pod forming. The pods are dense. The seeds are nearly round. The seed coat is deep yellow and shiny. The mealy part is yellow. The weight of 100 beans is 17 to 18 grams. The percentage of beans being consumed by insects is low. The beans are only slightly affected by disease. The quality is superior, the oil content is 21.6 percent and the protein content is 40.83 percent. The medium maturing variety requires 124 days from the time of budding to maturation. It is strongly tolerant to fertilizers, the stem is strong and does not lodge. It possesses characteristics of stable yields and bumper harvests. From 1972 to 1974, it was tested in the regional experiment at 49 test points in 11 counties in the Songhuajiang region. Average per mu yield was 320.2 jin, the highest per mu yield was 483.3 jin, an average increase of 8.7 percent in yield over that of the control Hei nong No 10 variety. Between 1973 and 1974, it was planted in large areas in the production experiment in the Songhuajiang region. It produced increased yields at all places over the presently

available superior varieties, the scope of increase was from 8.8 to 21.1 percent, averaging an increased yield of 14.1 percent. In 1975, the Xinjian Brigade of Acheng County planted 2 mu and the per mu yield was 494.8 jin. In 1976, our academy's atomic energy laboratory conducted four experiments and in every experiment the per mu yield was 498 jin. This variety has a greater potential for producing increased yields.

Key Points of Cultivation

It is suitable for planting in the central and southern regions of Heilongjiang Province. The planting area can reach above 2 million mu. This variety is hydrophilous and is tolerant to fertilizers. It can produce remarkably increased yields in fertile land. In fields of ordinary fertility, it can yield more than other varieties. The planting density should be 18,000 to 20,000 plants per mu. It should be planted less densely in fertile fields and more densely in infertile fields. The sowing time should be between the last 10 days of April and the first 10 days of May. The fields should be irrigated when the weather is dry and arid.

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HYBRID RICE POTENTIAL FOR INCREASED YIELDS DISCUSSED

Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 1, 10 Feb 80 pp 8-10

[Article by Wu Zhiqiang [0702 1807 1730], Wu Tiansong [0702 1131 6623], and Liang Yiyuan [2733 0308 0337]: "Potential for Increased Yields as Determined From the Growth Characteristics of Hybrid Rice"]

[Text] A hybrid rice whose cultivation is spread rapidly, that is broad gauge, and that shows greatly increased output is a rarity in the history of the spread of cultivation of superior varieties. In 1978, the spread in hybrid rice cultivation over 8 million mu throughout the province brought increased yields of 700 million jin. In 1979, this was again expanded to 9.5 million mu with maximum per mu yields of 1600 jin. This represented a general 20 to 30 percent increased output over conventional rice, and as much as a 10-fold increase in output. Experience has brought realization of a truth, namely, that only by planting hybrid rice in accordance with its characteristics can its full potential be derived and its output be increased.

Hybrid rice manifests three major characteristics in its growth, namely tillering heterosis, root system heterosis, and panicle and grain heterosis. If the laws and conditions that bring about these heteroses are clearly understood and ways found to satisfy the conditions, it becomes possible to take full advantage of the heteroses and reap high yields.

Tillering Characteristics

The tillering and growth of stems and leaves on hybrid rice is more vigorous than on conventional rice. We surveyed the relationship between effective panicles and output for late season hybrid rice in 11 counties in 6 prefectures throughout Fujian Province. We found that for per mu yields of less than 500 jin, effective panicles numbered between 100,000 and 120,000, with only 90,000 in some cases. For per mu yields of 700 to 800 jin, effective panicles numbered 150,000 to 160,000. For per mu yields of 900 to 1000 jin, effective panicles numbered between 180,000 to 190,000. For per mu yields of 1300 to 1600 jin, effective panicles numbered between 200,000 and 230,000. The greater the number of effective panicles, the higher the output, and the smaller the number of effective panicles, the lower the output. There was not, however, any positive correlation between tillering and effective panicles. In some cases, tillers were numerous yet effective panicles were not. In other cases,

tillers were numerous yet effective panicles were not. In other cases, though the total number of tillers was not large, the panicle formation rate was high and the effective panicles numerous. Therefore, mastery of the laws governing tillering characteristics and tillering that produces panicles in hybrid rice is extremely important. Observation was conducted on the tillering characteristics of Siyou No 2, the results of which show that in composition of output, 85 percent of the tillers had panicles. These tillers grew out of the second to the tenth nodes on the main stem. The panicle formation rate from the first tillering was highest, standing at 98 percent. The first tillers from the second to the ninth nodes all formed panicles. The first tillers from the tenth node all failed to form panicles. The rate of panicle formation from the second tillering amounted to only 40 percent. The second tillers from the second to the fifth nodes formed panicles. In the second tillering, growth from above the fifth node failed to form panicles. The third and subsequent tillerings failed to produce panicles. Therefore, it is necessary for the sake of output to promote first tillering from the second to the ninth nodes and from the second to the fifth nodes during the second tillering, and to restrain the tenth node during the first tillering, all nodes above the fifth one during the second tillering, and the growth of tillers from all nodes during the third tillering. This will promote tillering from the lower nodes during the early stages and restrain tillering from the higher nodes during the later stages.

Tillering of hybrid rice consists of tillering in the seedling beds and tillering in the fields. Results of study of the quality of seedlings show that from transplantings of clumps of health rice seedlings containing two single stemmed seedlings each, with applications of 28 jin per mu of nitrogenous fertilizer, per mu yields were 853.3 jin. For every clump containing a single three-forked seedling, with application of 14 jin per mu of nitrogenous fertilizer, per mu yields were 850 jin. For every clump containing three single stem healthy rice seedlings, with application of 28 jin per mu of nitrogenous fertilizer, yields were 778.1 jin per mu. For every clump containing one seedling with two forks, application of 14 jin per mu of fertilizers produced per mu yields of 750.3 jin. This shows that between one and two times the number of seedlings must be used and as much as 10 times as much nitrogenous fertilizer must be applied if transplanted seedlings have not tillered in the seedbeds, and output will still not be much more than from tillered seedlings. A look at the factors structuring output shows that effective panicles from single seedlings with two forks when 14 jin of nitrogenous fertilizer per mu had been applied were only 68.12 percent that of three-forked seedlings to which nitrogenous fertilizer was applied at the rate of 28 jin per mu, while the number of grains per panicle was 150 percent. Study of the rice plants at harvest time revealed that panicles on tillers formed at the second and third nodes of seedlings have three forks accounted for 49 percent of total output. These panicles were larger than panicles formed from tillers at any other node position. This shows that numerous forks on the seedlings of hybrid rice function to conserve seeds, conserve fertilizer, and produce large panicles with increased output. This is the primary characteristic of hybrid rice. Cultivation for production requires the sowing of seeds at the proper time, sparse sowing of seeds, heavy applications of fertilizer, and meticulous care. Generally speaking, in field tillering [as distinct from tillering in seed''ng beds], the largest panicles and the greatest number of grains derive from tillers from the lower nodes. In the case of single stem seedlings of Siyou No 2, following transplantation of the seedlings to fields, grain output from effective tillers that grew from the fifth, sixth, and seventh nodes amounted to 62 percent of

total output. This is the tillering heterosis in the fields. The size of panicles on tillers is closely related to nutritional conditions. Experiments revealed that the panicles on tillers from the seventh node were largest, the reason being that tillering from the seventh node takes place following the first application of a top dressing of fertilizer. In high output fields with yields of 1500-1600 jin per mu, fertilizer was both adequate and available to the plants at all times, and panicles were large and even in height throughout the fields. The panicle formation rate on tillers is related to carbon nutrients. Observations conducted during the jointing stage showed that there was effective tillering above three leaves. When great closing of rows occurs too early in advance of the booting stage, some of the tillers will die. This is because they receive little sunlight and the products of photosynthesis are inadequate because the tillers above three leaves are unable to get sufficient carbon nutrients. This suggests to us that in order to increase the tillering and panicle formation rate of hybrid rice, in addition to growing sturdy seedlings with numerous forks, making shallow transplantation, using shallow water on the paddies, providing heavy applications of tillering fertilizer, and restraining ineffective tillers, it is also necessary to practice reasonably close planting, and to have reasonable norms for transplanting. In the width of rows, wide rows with narrow plants help produce sufficient tillers without closing the rows, thereby increasing the tillering and panicle formation rate. Results of experiments conducted to compare hybrid combinations and their response to fertilizer and closeness showed the tillering and panicle formation rate to be highest from a (8 + 4) x 5 cun arrangement. The ratio of panicle heterosis to plants was greatest; growth of leaves, sheaths, stems, and panicles was coordinated. The turning of dry stem and sheath material following panicle formation is proper, the photosynthesis rate high, and the number of green leaves retained through the stage of completion of ripening are numerous. The root system retains vitality for a long time and output is remarkably higher than from the 6 x 5 cun or 5 x 3 cun arrangement. Scientific application of fertilizer according to the tillering characteristics both promotes tillering and protects tillers. Tillering fertilizer may be combined with differentiation fertilizer in a single application following baking of the fields and re-covering with water.

Root Heterosis

Root development of hybrid rice is manifested in quantity and quality heteroses. Our research shows that the number of roots, the thickness of roots, and the dry weight of the root system of hybrid rice are all greater than for either conventional Hong 410 variety, with its large number of panicles, or the shortstemmed large panicle type, Dajiahuo, and that both strength of root formation and the vitality of the root system are greater. Furthermore, floating roots are well developed.

The root quantity and quality heteroses are manifested not only during the early stage of growth, but are reflected, more importantly, during the late stage of growth. The dry weight of roots is greatest during the ripening stage; strength in root formation continues into the early booting stage, and the vitality of the root system reaches its zenith during the ripening stage. Floating roots begin to develop from the main stem at leaf age 11 and continue until the ripening stage. The roots of Siyou No 2 and Shanyou No 3 had five secondary roots while Hong 410 and Dajiahuo had only two or three secondary roots. The absorption capacity of the

floating roots is several times greater than that of rice r ots in general. This has a lot to do with the tremendous tillering, panicle formation, and fruiting rate. The root heterosis is also manifested in the upper and lower levels of the cultivated layer of high yield fields when the fields are covered with a layer of water during the early stage, when the fields are sunned at mid-stage, and in the moistness of the fields during the late stage. At harvest time, 97.39 percent of the dry weight of the root system came from roots at from 0 to 20 centimeters down in the cultivated layer of soil, and all these roots were old, dark brown ones. Roots at from 20 to 40 centimeters down amounted to 2.61 percent of the total, and they were all white roots with great vitality. The root heterosis was formed in excellent soil conditions where there was reasonably close planting, and scientific watering and fertilizing. Their formation assured that heteroses in tillering and in panicle and grain formation could proceed to their fullest extent.

Development of the root system in hybrid rice is intimately related to scientific fertilization. A look at the production over large areas in our province shows that where per unit yields of hybrid rice were not high, more fertilizer was used than for conventional varieties. That the quantity of fertilizer applied to high yield fields was higher than the results determined by the Hunan Agricultural Institute may be because some fertilizer was not absorbed. The amount of potassium fertilizer needed by hybrid rice was also greater than for conventional rice. Both conclusions were unanimous on this point. As for the fertilizer absorption during various stages of growth, reports from bumper harvest fields in Fujian Province and from the Hunan Pedology Institute were fundamentally the same. Absorption of nitrogen, phosphorous, and potassium from sprouting to tillering was 36.56 percent, 18.10 percent, and 27.60 percent respectively. Absorption from the time of early heading until completion of heading was 38.82 percent, 53.70 percent, and 52.90 percent respectively. From the time of full heading until full ripening, it was 24.62 percent, 28.20 percent, and 19.50 percent respectively. Following heading, about one-fourth of the available fertilizer remained to be absorbed, and this was of major significance in boosting both the fruiting rate and the per thousand weight of grains.

Panicle and Grain Development

The hybrid rice had large panicles and numerous grains. The number of grains formed per panicle totaled more than 100, in general, with many yielding from 200 to 300 grains, which reflects a heterosis in panicles and grain. Nevertheless, a fruiting rate that is not high is its shortcoming.

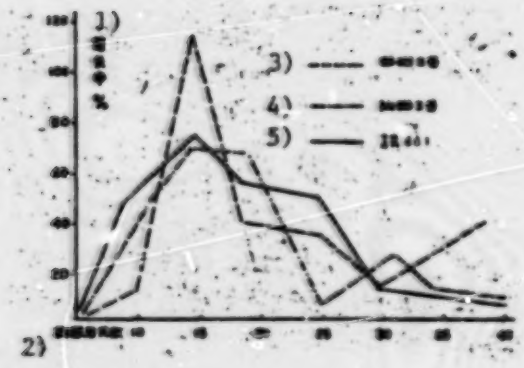
The hybrid rice's tillering was strong; stems and leaves grew vigorously, the efficiency of photosynthesis was high; and there was a large accumulation of dry material. As a result, panicles were large and spikelets numerous. Microscopic examination showed that during the late stage of spikelet differentiation in Shanyou No 3, the number of spikelets per panicle averaged 310, while they numbered only 204 in the restorer line, IR_{661}.

Spikelets per panicle were 51.8 percent more numerous in Shanyou No 3 than in IR_{661}. During the period of panicle formation, the number of spikelets declined, with only 212 per panicle occurring in Shanyou No 3, which has more than most. At harvest time the number of grains set were less. Shanyou No 3 had 140 grains.

Both the degeneration rate and the empty grain rate for Shanyou No 3 was higher, on average, than for IR_{661}. There were two reasons. One was incorrect introduction of nutrients. Nanyou No 3 has strong photosynthetic powers from the time of sprouting until the differentiation of young panicles, which is manifested in a daily accumulation of dry material that is 234 percent that of IR_{26} to pave the way for the development of panicles during the mid-stage and to form the heterosis of large panicles and numerous spikelets. During the mid and late stages, the photosynthetic powers of Nanyou No 3 gradually decline. The daily accumulation of dry material from full heading until full maturity amounts to only 98 percent that of IR_{26}. This results in the vieing of one branch with another and one spikelet with another at the time of the Spring Equinox. This is the main reason for the high degeneration rate for spikelets and the low fruiting rate in hybrid rice. Following completion of heading, the effective rate of photosynthesis and the darkness or lightness of leaf color has a lot to do with the number of green leaves at the time of harvest, and this has a lot to do with late stage applications of fertilizer in turn. In high yield fields in our province where per unit yields of between 1500 and 1600 jin of hybrid rice were obtained and where the fruiting rate was between 91 and 92 percent, it was close attention to mid and late stage top dressings of fertilizer to preserve the green color of the final leaves that brought these results. When color of leaves fades or an early shriveling of the leaves takes place during the late stage, the fruiting rate may decline by as much as 50 to 60 percent. The second reason was related to climatic conditions. Flowering and fruiting of hybrid rice is quite sensitive to temperatures. The period for panicle formation and flowering for Siyou No 2 had maximum daily temperatures of from 35 to 30°C and the fruiting rate was only 59.5 percent. Mid season and late season hybrid rices flower in higher temperatures, which results in a high empty grain rate. If temperatures are low during flowering, averaging below 23°C, the empty grain rate will also be high, which will mean a reduced output, or there will be no panicle formation, which will mean an aborted harvest. This shows that the sensitivity of hybrid rice to low temperatures is greater than that of conventional rice. Average daily temperatures of from 23 to 37°C (with maximum daily temperature not exceeding 35°C) are safe ones for the full heading period. Consequently mastery over the sowing and transplanting periods is strictly necessary.

Hybrid rice has a long period of maturation with two high points of being in the milk. For Siyou No 2, the first high point of being in the milk comes 15 days following heading, and the second comes 35 days after heading. For Shanyou No 3, it is 15 and 30 days respectively. As a result, the harvesting of hybrid rice must be done when it is totally ripe.

In summary, in hybrid rice, the tillering heterosis is fundamental; the panicle and grain heterosis is the goal, and the root heterosis is the assurance. The relationship among the three is extremely close. Only when full advantage is made of the tillering heterosis, the root heterosis, and the panicle and grain heterosis is it possible to have numerous panicles, large panicles, a high fruiting rate, large and heavy grains, and a bumper harvest.



Key:
1. Rate of increase
2. Number of days after heading
3. Sihua No 2
4. Shanyou No 3
5. IR_{661}

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BRIEFS

SWEET POTATO BLAST--There have been no reports as yet of sweet potato blast in foreign countries. It first broke out in China in 1946 in the provinces of Guangdong and Guangxi, and in 1958 it was transmitted into Hunan and Jiangxi. In 1963, it was carried to Pingyang County in Zhejiang Province. It was first discovered in Fujian Province in Fuding County in 1971, and a 1977 survey showed that sweet potato blast was found in 109 communes in 30 counties of Fujian. It has an extremely adverse effect on sweet potato output, and it is the disease that most threatens sweet potato output in our province at the present time. Chinese provinces that have undertaken research on sweet potato blast include Guangxi, Guangdong, Jiangxi, Hunan, Zhejiang, and Fujian, and a great deal of work has been done in addition in Guangdong, Guangxi, and Zhejiang. The problems researched have been concentrated mostly on the identification of the pathogenic bacteria and the range of hosts for the parasites, the avenues for infestation and spread, conditions favoring outbreaks of the disease, varieties resistant to disease, and chemicals useful in prevention and control. Pathogenic bacteria causing sweet potato blast include Xanthomonas batatae n. Sp., Bacillus Kwangsinensis n. Sp., and Pseudomonas batatae n. Sp. [Excerpts] [Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 1, 10 Feb 80 p 59] 9432

WHEAT VARIETY RESISTANT TO SCAB--In the formation of a new scab resistant wheat variety, "Minkang 130," we used Sumai No 3 as our material, irradiated it with cobalt 60 (a 2500 dosage), and bred it for six consecutive generations. Its total growth period is about 155 days (earlier by from 3 to 5 days than the original variety). Plants grow to a height of from 105 to 110 centimeters (about 15 centimeters shorter than the original variety); their per thousand grain weight is from 35 to 37 grams; they are resistant to wheat scab, tolerate wetness, turn color well, and are moderate to strong in tillering. In demonstrations conducted in large fields over a 2-year period by the Nanmen Production Brigade of Chengguan Commune in Jianou County under water and fertilizer conditions that were the same as in other large fields, and in years when scab infestations were moderate to heavy in severity, per unit yields were about 300 jin without spraying. In 1978, despite damage from the cold which reduced output, per mu yields were still 279 jin. In 1979, per mu yields were 306 jin. "Minkang 130" is currently the foremost variety with fairly high yields that is scab resistant. Until high yield varieties that are scab resistant are found, it will find use as a transitional variety in inland regions where scab infestations are severe. Its principal drawback is no tolerance for dryness during the sprouting period. As of the present time, units have introduced its cultivation to 18 counties in 7 provinces, and during 1980 there will certainly be experiments with it in large fields. [Text] [Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 1, 10 Feb 80 p 43] 9432

CSO: 4007

BRIEFS

SUNFLOWER HARVEST--Zhangye County, Gansu Province, reaped a bumper harvest of sunflower seeds in 1980, exceeding the annual production plan by 4 million jin and doubling the total output in 1979. [SK310840 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 28 Oct 80 SK]

WUWEI COUNTY IRRIGATION--In the past 20 odd years, Wuwei County, in Gansu, built three medium-sized reservoirs, more than 800 kilometers of irrigation canals and 11 hydroelectric power stations with a total installed capacity of 4,770 kilowatts. Now, of the county's 1.52 million mu of land under cultivation, 1.32 million mu are effectively irrigated, and 970,000 mu are guaranteed of irrigation water. In 1979, despite low temperatures and drought, the county's average per-mu grain output still reached 487 jin. This year the county has reaped a good summer grain harvest. [Beijing XINHUA Domestic Service in Chinese 0322 GMT 20 Oct 80 OW]

CSO: 4007

TRENDS IN REFORMING CROPPING SYSTEM DISCUSSED

Guangzhou GUANGDONG NONGYE KEXUE [GUANGDONG AGRICULTURAL SCIENCES] in Chinese No 3, 8 May 80 pp 8-10

[Article by Liang Guangshang [2733 0342 0794] of the Huanan Agricultural Academy: "The Direction of Development of Reforming the Planting System in Guangdong"]

[Text] For the past 30 years, the reform of the planting system in Guangdong has undergone several stages. During the 1950's, single cropping was changed to double cropping. Growing straw (interplanting) was changed to tilling and upturning the soil (continuous cropping). Mixed cropping (mixed with wild rice) was changed to separate planting. Direct sowing was changed to transplanting. Dry land was changed to watered fields, large plants planted loosely were changed to small plants planted densely. In the 1960's, the planting method was reformed. The square method of planting was changed to the rectangular method, the double season rice field let to dry under the sun after plowing in winter was changed to planting of green manure in winter in double season rice fields. During the 1970's, rotational transplanting and multiple planting were developed. Double cropping was changed to triple cropping. Triple cropping was changed to cropping four times a year. After these reforms, great achievements have been realized. Today, the 1980's have come. According to statistics of 1978, the entire province's total yield of food grains was 32.5 billion jin, averaging an annual per mu yield of 942 jin. Of the area sown with paddy rice, double season rice constitutes 97.9 percent (of which early rice constituted 47.3 percent, late rice constituted 50.6 percent), single season rice constituted 1.8 percent, three-season rice constituted 0.3 percent (according to reports made in 1979, only over 1,000 mu remained, an insignificant amount), and the multiple planting index was 229 percent. Therefore, according to the policy of "taking food grains as the key link, overall development, suiting measures to local circumstances, appropriate centralization," and in reference to the actual conditions of production at present, changing the single and double season rice to a triple cropping system as the central task, and developing rotational cropping, interplanting, mixed planting and companion planting are still the direction of development of the present reform of the planting system.

I. The Theoretical Basis for Developing the Triple Cropping System

In reforming the planting system, the ecological system of the farmland of the locality must be analyzed. Natural resources, social resources and scientific techniques must be fully utilized. Advantageous conditions must be utilized,

disadvantageous factors must be avoided and overcome. A rational agricultural structure must be established to suit measures to local circumstances, to engage in multiple operations in agriculture, forestry, animal husbandry, fishery and sideline production, and to develop on an overall basis. Of the dry substances produced by ordinary crops, 90 percent come from the organic substances produced by photosynthesis, the remaining 10 percent are the inorganic substances absorbed by the roots of the plants. To fully utilize light energy and fertility of the land, one method of course is to develop crop colonies in unit areas via techniques of cultivation and dense planting and to expand "green factories." But to plant only two seasons or one season of paddy rice a year in the watered fields in the tropical and South Asian tropical Guangdong is obviously a waste of natural resources. According to studies, there are four months in which the average daily temperature is above 10°C. At the same time, at localities where the total average daily temperature during the entire period is above 15.7°C, early maturing varieties of single season rice can be cultivated. There are 7 to 8 months in which the daily average temperature is above 10°C. At the same time, at the localities where the total average daily temperature during the entire period is above 20°C, double season rice can be cultivated. The safe growth period of paddy rice is the total number of days of safe growth of paddy rice beginning from the day in early spring when the average daily temperature stabilizes at 12°C to the day in late autumn when the average temperature stabilizes at 22°C added to the number of days the late rice heads to 35 days after maturation. According to this standard, our province's northernmost Nanxiong (25 degrees and 8 minutes N latitude at 133.8 meters above sea level) has 239 days of safe growth period for paddy rice. Yaxian in the southern part of Hainan Island (at 18 degrees and 14 minutes N latitude, 6.8 meters above sea level) has 365 days of safe growth period for paddy rice. If the total growth period of intermediate maturing varieties of paddy rice is taken as 120 days, then double season rice can be planted everywhere in the province. Winter crops need a lower temperature and naturally winter crops can be developed for triple cropping. As for the number of hours of sunshine and the radiative energy from the sun, the total number of hours of sunshine throughout the entire year at Shaoguan in the north is 1921 hours. The radiative energy of the sun throughout the year for each square centimeter is 113,315 Calories. In one year, the total number of hours of sunshine between March and June is 496.1 hours and the amount of radiative energy is 35.814 Calories/centimeter^2. Between July and October, they are 905.9 hours and 50.353 Calories/cm^2 respectively. Between November and March they are 519.9 hours and 26.233 Calories/cm^2. For the triple cropping system of rice-rice-wheat in Guangzhou, early rice receives 463.0 hours of sunshine and 30,690 Calories/cm^2 of radiative energy respectively, late rice receives 707.0 hours and 49,089 Calories/cm^2 respectively, winter wheat receives 754.0 hours and 33,558 Calories/cm^2 respectively. The number of hours of sunshine in Shaoguan is less than in Guangzhou but the amount of radiative energy during the early and late season crops is more but the amount of radiative energy during winter is less. But the amount of sunshine and heat for triple cropping a year is entirely sufficient for the need. Except for the lower temperatures and less heat in the northern mountain regions of the Shaoguan region, crop production at all places of the province can yield three crops a year. Under the situation of the past 10 years, the entire province's food grain production has lingered between 32 billion and 34 billion jin, it may be easier to increase multiple planting to increase yield than to raise unit yield or expand the planting area in an attempt to increase yield. It is necessary to take triple cropping a year in watered fields and

double cropping a year in dryland as goals, and to establish a rational crop production structure by adjusting the planting areas of rice-wheat, rice-potato, rice-beans, rice-sugar cane, rice-jute, rice-green manure, and rice-vegetables (planting vegetables in rice fields in winter) in the area of rice fields.

II. Changing Single Season Rice to Double Or Triple Cropping

The entire province has about over 600,000 mu of single season rice, mostly formed individually by environmental conditions of cold or dry or waterlogged conditions. Cold regions: such as the northern mountain regions of severe cold in the Shaoguan region, there is a definite area of single crop fields. These should be changed to double cropping of rice-rape, or rice-broad bean (pea, green manure) etc. according to actual conditions. Regions affected by drought: At various places there are still relatively large areas of rice fields where only one season of paddy rice is planted each year because of spring drought or autumn drought. If water conservancy projects can be built, these fields can be changed to triple cropping of paddy rice and dryland food grains a year. Even if water conservancy cannot be immediately solved, they should be changed to planting dryland food grains as double cropping fields. For example, Yangshan County has always planted corn in dry fields and drylands, potato or sorghum and corn in autumn. The yield of the two seasons of dry food grains is not lower than the yield of two seasons of paddy rice. Regions affected by waterlogging: There are about 100,000 mu of "pond fields" such as in Qingyuan County along the banks of the lower reaches of Beijiang. Because of outward flooding and inward waterlogging during summer and autumn, only one season of paddy rice is planted each year. If levies and flood gates such as those built in the sandy fields in the Pearl River Delta can be constructed to prevent floods and break the tides, and if electrically operated drainage can be set up, then inward waterlogging can be avoided, and double season paddy rice can be planted. Even if flooding and waterlogging cannot be overcome immediately, the period when the fields are under water should be utilized for raising fish. Rice can be planted after the water has receded. When the rice has matured, wheat following rice or astragalus following rice can be sown to become triple cropping fields.

III. Changing Double Season Rice to Triple Cropping

The province is currently using the triple cropping system of double season rice mainly of rice-rice-wheat, rice-rice-potatoes, rice-rice-beans, rice-rice-green manure (green manure).

(1) The Triple Cropping System of Rice-Rice-Wheat

This is the major planting system of our province. In 1978, the spring harvest was over 6 million mu of wheat, averaging a per mu yield of 141 jin. The area and yield all have potential. It is often said that "planting wheat causes the land to become infertile" and wheat "easily germinates" and thus nobody is willing to plant wheat. But one must not "refuse to eat because he is afraid of choking." The techniques and measures of cultivation should be actively improved and dryers for wheat seeds should be used.

(2) The Triple Cropping System of Rice-Rice-Potato

The region between the southern part of the Zhanjiang area to Hainan Island has always been winter potato producing region. If cold resistant varieties can be selectively used for early planting and fast growth so that potatoes can fruit before the frost begins, and with the implementation of temporary frost prevention measures (irrigation and smoking etc.) then high yields can be realized. But in winter planting of potatoes in areas along the central and eastern coast north of Maoming and Gaozhou, there is always the threat of reduced yield or reduced harvest due to damage by frost in ordinary years. At these localities, the planting system should be changed to a triple cropping system of early rice-autumn potato-winter wheat, or a triple cropping system of rice-rice (early rice varieties)-late autumn potato. These can yield 20 percent to 30 percent more than the planting system of rice-rice-winter potato. Also in regions (such as Hainan Island) where late rice can be damaged by typhoons, late rice can be changed to autumn potato to avoid such damage.

(3) The Triple Cropping System of Rice-Rice-Beans (Peanuts, Soybeans, Broad Beans, Peas, Green Manure)

All of these systems are customarily used in our province. The first triple cropping system of early rice-late rice-winter peanuts can be continuously propagated on Hainan Island. Many places in the province customarily use the triple cropping system of early peanuts-late paddy rice-winter potatoes (wheat). In recent years, the planting system was changed to early rice-autumn peanuts-winter potatoes (wheat) in the Zhanjiang area because there were conflicts between the time of harvesting early peanuts and the harvesting of early rice, in the labor force and in the work of drying the harvested crop under the sun. This is a reasonable reform. The second triple cropping system of early rice-late rice-winter soybeans has always been propagated in Dongwan and Gaozhou counties. In the triple cropping system of early soybeans-late paddy rice-winter wheat, in the farmland of various places and in the sandy fields in the Pearl River Delta, the fields after harvesting of early soybeans are utilized as seed beds for late rice and thus it is not necessary to pre-arrange empty watered fields during the earlier season for seed beds for late rice. This is suiting measures to local circumstances and is worth practicing. The third triple cropping system of early rice-late rice-winter broad beans (peas, astragalus, vetch) is a very common planting system. In the Meixian region the last crop is broad beans, in Huiyang and Chaozhou areas it is peas, in regions throughout the province the third crop is astragalus or vetch. These systems should be continuously popularized. Generally speaking, the triple cropping system of rice-rice-beans and the triple cropping systems in which rice, soybeans and peanuts are interchanged during the early and the late seasons are all planting systems that can nurture the fertility of the land. Setting aside a definite proportion of area in the early season, the late season and in winter is also a direction for development.

(4) The Triple Cropping System of Rice-Rice-Vegetables (Tobacco)

This is a system used at various places throughout the province to plant vegetables in rice fields, such as carrots planted at various places, cabbage of the Foshan area, garlic of Kaiping, winter tobacco of Gaohe and Nanxiong, wax gourd, peas and leaf mustard of Shantou etc. which are all famous regional specialties.

They can enrich the rice fields and they also have economic benefits. These are good methods of diversification, increasing yield and increasing harvests. The four types of triple cropping systems mentioned above evaluated from the point of view of utilization of land and nurturing of land show that the rice-rice-wheat system exhausts the land. The rice-rice-beans and rice-rice-potato systems nurture the land. The rice-rice-green manure (astragalus and vetch) and rice-rice-vegetables (tobacco) systems make the soil fertile. In planning for production and the distribution of crops, a definite proportional area must be arranged to regulate nurturing of the fertility of the soil and increased yields will be the natural results.

IV. Developing Rotational Planting, Interplanting, Mixed Planting and Companion Planting

The methods of rotational planting, interplanting, mixed planting and companion planting in the watered fields and dryland in our province are varied. These are closely related to the agricultural structure, diversification and nurturing of the fertility of the land.

(1) Rotational Planting

The system of rotational planting of watered fields and dryland is an important measure to nurture the fertility of land, prevent and eliminate diseases, insects, weeds, avoid natural disasters and raise the yield of unit area. The 1-, 2-, 3-year rotational planting system of such crops as dryland rice-wheat-potatoes (sweet potato, cassava) and beans and corn in dryland is used throughout the province as well as the 1-, 2-, 3-year rotational planting system of rice-taro, rice-wheat, rice-beans, rice-potato (sweet potato, white potato), rice-sugar cane, rice-jute, rice-tobacco etc. In recent years, the area, total yield and annual per mu yield of the two rotational planting systems of food grain crops and economic crops have all increased remarkably. According to studies of the triple cropping system of early peanut-late paddy rice-winter wheat conducted by the Guangdong Provincial Agricultural Science Academy, the percentage of utilization of light and temperature conditions and the growth seasons of the entire year of this system reached 80 percent to 90 percent while that of the double cropping system of double season rice was only 60 percent to 65 percent. Planting paddy rice in fields previously planted with peanuts can produce an increased yield of 80 to 100 jin per mu. This is because peanuts can fix 8 to 12 jin of nitrogen per mu. The leaves, vines, remnant roots and bran of peanuts (as feed, the bran is converted as barnyard manure) are returned to the soil as fertilizers. They can improve the soil and raise the fertility. In one production unit whose total yield of food grains for the entire year does not drop, the area of medium and poor fields for planting spring peanuts or autumn peanuts can be as much as 30 percent of the area of the rice fields. Planting rice in fields previously planted with rice and sugar cane in rotation can produce an increase of 40 to 50 jin of rice per mu. Since 1972, the Huangbian Production Brigade of the Shatou Commune in Panyu County has used the planting system of two rice crops and two crops of fish. The average annual per mu yield of early and late rice of six mu of land reached between 1,350 and 1,400 jin, and the total per mu yield of summer fish and winter fish was between 460 and 500 jin. This can be implemented on a trial basis at places where conditions are favorable. Recently, the Huiyang area created the "three rotational planting system." The rice fields of one production unit was divided into three rotational planting zones, the first

zone was for rice-rice-dryland food grain crop; the second zone was for rice-rice-green manure; the third zone was for rice-rice-winter fallow (plowed in winter and let empty to dry). Each zone rotated with the other zone, completing the rotation in 3 years. This changed the ecological system of the farmland and regulated the fertility of the land. This can be tried by all localities.

(2) Interplanting

Interplanting of rice and green manure, like the planting of early rice interplanted with sesbania in Shantou and Foshan regions, and before harvesting of late rice, astragalus is sown following rice. This system is called the two grain crops and two green manure crops system. It nurtures the fertility of the soil and increases yield. Interplanting of rice and jute like the interplanting of early rice and jute in the various areas of Shantou, Foshan and Zhaoqing, and after harvesting the jute, late rice is planted. Jute has a stem that grows straight and tall and there are few or no branches. Interplanting jute and rice is more beneficial to the growth of early rice than interplanting of sesbania and rice. Interplanting of potato and soybeans like the interplanting of soybeans, corn, carrots with winter planted sweet potatoes in Gaoznou County yields four croppings in one crop on one piece of land. The benefits are great. Interplanting of cassava (sugar cane) and soybeans (mung beans), like interplanting of soybeans or mung beans in-between rows of cassava in Dongwan County, allows turning under of green parts of the plants as green manure, and interplanting of sugar cane and mung beans as green manure are all very popular and are beneficial to the formation of organic fertilizers during the middle and late periods of cassava or sugar cane. Interplanting of tropical crops and dryland food grains, like interplanting of dryland rice, corn, peanuts and cassava in-between rows of tropical crops such as lemongrass, sisal hemp, pineapples, on the Leizhou Peninsula and on Hainan Island is very popular and the results are good. Forests and food grains are interplanted such as in Xinyi, Huaiji, Gangning, Lechang counties where mountains have been reclaimed to plant fir, bamboo, oil tea etc. and interplanted in-between rows of the young forest trees are dryland rice, cassava, corn, peanuts. The areas of these are expansive and the benefits are great. For example, the Sihe Commune of Xinyi County has a lot of mountain land. Each year, over 20,000 mu of mountain land are reclaimed to plant fir and interplant cassava. In some production brigades, each person can receive an average of 3,000 jin of cassava a year. The entire commune has over 50 small scale cassava powder refineries powered by hydroelectric power. Each refinery processes 5,000 jin of fresh cassava a day. They also can grind rice, use their power for lighting, and they have led construction of the mountain regions foreward and developed agricultural, forestry, animal husbandry and sideline production.

(3) Mixed Planting

At various places throughout the province, peanuts are planted in drylands and most are mixed planted with corn, millet, sesame and such crops. One is tall and the other is low, forming a combined colony. Light energy and fertility of the land can be fully utilized. Many croppings in one crop on one piece of land increase yield and harvests.

(4) Companion Planting

Throughout the province it is customary to plant wheat following rice, plant astragalus following rice, and in winter potato producing regions, potato is planted following rice. The companion planting of wheat or sweet potato or astragalus seeds scattered and sown is done 12 days before harvesting of late rice. This is done to extend the growing period of the winter crop, and it is a planting method to increase yield. Sowing of late rice seedlings following early rice like the cultivation of late rice seedlings following rice in sandy fields in Zhongshan County during the period 10 to 12 days following rice can eliminate the necessity of pre-arranging empty rice fields (10 percent) during the early season as late rice seed beds. This does not reduce the area of early rice and the yield can be increased. In the sandy fields and farmland on the plains where there is difficulty allocating seed beds for late rice, this method can be popularized.

Generally speaking, the triple-cropping-a-year system mentioned above and the planting systems of rotational planting, interplanting, mixed planting and companion planting each has its own outstanding characteristics at different localities. The five sectors of agriculture, forestry, animal husbandry, fishery and sideline production can use one, or two or three of these methods at the same locality and at the same time for production to suit measures to local circumstances and to utilize these methods in a versatile manner. Overall planning requires a survey of agricultural resource, analysis of the ecological system of farmland and the implementation of agricultural zoning to develop production.

9296
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NEW LATE VARIETIES, HYBRID COMBINATIONS INTRODUCED

Late Rice Introduced

Guangzhou GUANGDONG NONGYE KEXUE [GUANGDONG AGRICULTURAL SCIENCES] in Chinese No 3, 8 May 80 pp 53-54

[Article by Li Shanfa [2621 0810 4099] of the Guangdong Provincial Agricultural Bureau and Huang Guizhang [7806 2710 4545] of the Paddy Rice Institute of the Guangdong Provincial Agricultural Science Academy: "Introduction to New Varieties of Late Rice and New Hybrid Combinations"]

[Text] New Varieties of Late Rice

(I) "Nan Ke Zao"

"Nan ke zao" is the hybrid of late xian "zu nan No 1" and "ke 6" crossed by the Huilai County Agricultural Science Institute in 1971 and successfully bred in 1975. It is a temperature sensitive variety that is slightly sensitive to light.

It first participated in the provincial regional experiments in 1979 as a late crop. Statistics of 38 test localities showed an average per mu yield of 306.1 jin, an increase in yield of 22.78 percent over the control "guang tang ai." The per mu yield at the Shantou Regional Agricultural Science Institute which is the highest yielding test locality was 1,057 jin, an increase of 41.7 percent over "guang tang ai." In the late season of the same year, it was planted in over 4,600 mu of land in Huilai County. Performance was good, generally yielding 700 to 800 jin per mu, and reaching 1,000 jin.

"Nan ke zao" is early and intermediate maturing. The entire growth period is longer than that of "guang tang ai" by 7 to 10 days. The plant is about 80 centimeters tall. The stalks are clustered. The stems are firm and strong, tillering strength is strong, the color of the leaves is medium dark. During the early period of growth the leaves are bent and drooping. During the late period of growth the boot leaf grows straight, heading is uniform, the percentage of panicle formation is high, there are more effective panicles, and panicles are larger. During the late period of growth there are more green leaves, the branches are green and the straws are waxy, the grains are full, and the thousand grain weight is between 25 and 26 grams. It has a relatively strong resistance to shattering and to blast of rice. It requires a medium level of fertilization, but the leaves are rather thin, and if too much nitrogen is applied during the

middle period of growth, it is easily affected by bacterial blight and its resistance to sheath and culm blight is relatively weak.

Key points of cultivation: It is generally sown after 7 July. Its seedling age is about 25 days. Small plants are densely planted and between 120,000 and 150,000 seedlings are transplanted in one mu. During the middle period of growth, attention should be paid to drainage and refining the seedlings. During the late period of growth, sidedressing should not be applied too heavily, and especially nitrogen fertilizers should not be unilaterally applied.

(II) "Zao Bao Tai"

"Zao bao tai" is an intermediate maturing variety bred from the single plant of the variance selected from the nursery of the original variety "bao xuan No 2" by comrades of the Guangdong Provincial Agricultural Bureau when they visited the Guangxi Shenxi County Superior Seed Farm in 1976. In 1979, it participated in the provincial regional experiments in the late season. The 34 test localities yielded an average of 719.9 jin per mu, an increase of 9.6 percent in yield over "guang tang ai." Generally, per mu yield is 600 to 700 jin.

The variety matures about 10 days later than "guang tang ai." The plant is between 100 and 105 centimeters tall, the stems are pointed and thin, the plant type is not too clustered and not too spread out, the leaves are thin and long and thick and straight, the color of the leaves is emerald green. Tillering strength is strong. The percentage of formation of panicles is high. There are many effective tillers, heading is uniform, the panicles are longer than the original variety, but there are less small panicles. During the late period of growth the color during maturation is good, the fruits are full, the husk is coarse, and the thousand grain weight is between 21 and 22 grams. It is conservative in the use of fertilizers, its resistance to diseases and insects is relatively strong, its adaptability is broad, its demand upon the soil is not strict and it is suited for planting in fields of medium and low fertility. Its shortcoming is that during the late period of growth, the small branches and stems wilt early, it is not tolerant to fertilizers, and it easily lodges.

In cultivation, it should be sown before 21 June and transplanted after 23 July. Its seedling age is 40 to 45 days. The host field requires the additional application of organic fertilizers. During the middle period of growth the field should be appropriately exposed to dry to control ineffective tillers and strengthen resistance to lodging.

(III) "Yu Suo Bao"

"Yu suo bao" is also called "Yu lin bao xuan" or "yu bao xuan." It is an intermediate maturing variety systematically bred from "bao xuan No 2" and introduced into our province in 1977. Generally its per mu yield is between 600 and 700 jin. In the late season of 1979, the Buma Brigade of the Donggang Commune in Xinxing County planted 122 mu. Average per mu yield was 602 jin, an increase of 9.4 percent in yield over the average per mu yield of 550 jin of "bao xuan No 2."

The variety matures 6 to 8 days earlier than the original "bao xuan No 2." The plant is 90 to 100 centimeters tall, 5 to 10 centimeters shorter than the "bao

xuan No 2." The plant type is tightly clustered, the leaves are straight, the tillering strength is medium, heading is uniform, each panicle has about 100 grains and the fruiting percentage is about 90 percent. During the late period of growth the color of maturation is good, the grains are full, the quality of rice is good, and the percentage of yield of rice is high. It is conservative in the use of fertilizers, it has a relatively strong resistance to bacterial blight and is less damaged by insects. Its shortcoming is that its stems are rather tender and weak, it is not resistant to lodging. During the late period of growth the leaves easily yellow and manifest early withering when the weather is overly dry or when drought occurs.

Key points of cultivation: The seedling age is from 40 to 45 days and the seedlings are transplanted at the end of July and the beginning of August. Transplanting specifications are 5 x 4 cun or 6 x 4 cun. About 200,000 seedlings should be transplanted per mu. Base manure should be sufficiently applied, sidedressing should be applied early, fertilizers to strengthen the ending period of growth should be appropriately applied and should be coordinated with the application of phosphorous and potassium fertilizers to strengthen resistance to lodging. During the late period of growth, irrigation should not be terminated too early to prevent early withering which will affect the weight of grains.

(IV) "Tie Qiu No 15"

"Tie qiu No 15" is a new late season early and intermediate maturing variety bred successfully in 1977. It is a hybrid of early rice "xin tie da No 2" and late rice "qiu er ai 2-4" crossed in 1973 by the Chaoan County Agricultural Science Institute. In the late season of 1979, it participated in the provincial regional experiments. The average per mu yield of 39 test localities was 695.5 jin, an increase of 5.92 percent over the control "guang tang ai," ranking 7th place. In 1978, the Chaoan County Agricultural Science Institute planted 32.76 mu, average per mu yield was 973.6 jin. Of these, 1.08 mu produced a per mu yield of 124.4 jin. The Neipan Brigade of the Dongfeng Commune in Chaoan County planted 328 mu with an average per mu yield of 1,103 jin.

The variety is an early and late hybrid variety. Its sensitivity to temperatures is stronger but its sensitivity to light is relatively weak. The entire growth period is longer than that of "guang tang ai" by 6 to 10 days. The plant height is about 85 centimeters, the plant type is pointed and clustered, the leaves are thick and straight, the color of the leaves is dark green, and during the early period of growth the leaves are narrow and short. It reacts sensitively to fertilizers, it is tolerant to fertilizers and resists lodging. Its tillering strength is strong and its growth trend is prosperous. It has more effective panicles, generally from 230,000 to 240,000 panicles per mu. Each panicle has 70 to 80 grains. The fruiting percentage is about 90 percent. The thousand grain weight is 24 to 25 grams. During the late period of growth, the color of maturation is good, it is more resistant to bacterial blight and verticillium wilt but it is easily affected by sheath and culm blight and rice leaf hopper. If fertilization and irrigation are not managed well, red wilt easily occurs. The variety is suited for planting in high yielding and fertile fields.

Key points of cultivation: It is suitable for sowing on 7 July and transplanting about 7 days after 23 July. The seedling age is about 25 days. Between 80 and

100 jin of seeds are sown in one mu and small plants are planted densely. In fertile fields, 100,000 seedlings can be transplanted in one mu. The method of fertilization should be to "apply fertilizers at the beginning, to stabilize application during the middle period of growth and to apply fertilizers as supplements during the ending period of growth." After transplanting, irrigation should be terminated early for intertilling. Additional phosphorous and potassium should be applied to prevent red wilt disease. During the middle period of growth, the fields should be dried under the sun to refine the seedlings. Attention should be paid to preventing the occurrence of sheath and culm blight and the rice leaf hopper.

(V) "Hua Zu Ai"

"Hua zu ai" is a new late xian intermediate and late maturing variety bred as a hybrid of "shuang hua ai" and IR20 x zu yin 2" by the Paddy Rice Research Institute of the Guangdong Provincial Agricultural Science Academy. Its maturation time is basically the same as that of "er bai ai." In the late season of 1979 it participated in the provincial regional experiments for the first time. The average per mu yield of 35 test localities was 759.8 jin, ranking second place, following "er bai ai."

The variety's greatest advantage is its stronger resistance to bacterial blight and higher tolerance to cold during the late period of growth. The plant height is about 90 centimeters. The plant type is not too clustered and not too spread out. The stem is firm and hard, the leaves are straight, narrow and thick, the tillering strength is intermediate, the panicles are larger, the fruiting percentage is above 90 percent. During the late period of growth the branches are green and the straws are waxy. It is suited for planting in coastal regions where there are strong typhoons and where bacterial blight easily occurs.

(VI) "Tang Chao Ling"

"Tang chao ling" is the late season early maturing variety selected from the intermediate line of the variety "caho ling No 11" of the Guangxi Lingshan County Agricultural Science Institute by the agricultural science station of the Tangxia Commune of Xinhui County in 1974. It matures slightly later than "guang tang ai." It participated in the provincial regional experiments in 1978 and 1979 consecutively. Per mu yields were 589 jin and 705.5 jin respectively, an increase of only 1 percent and 7.45 percent over those of the control "guang tang ai." It performed better at the test localities in the Shaoguan and Foshan areas. The agricultural science institute of Qujiang County tested it in the late season in 1979. Per mu yield was 920 jin, ranking first place, and yielding an increase of 13.1 percent over that of the control "guang tang ai." The agricultural science institute of the Foshan area tested it in zones in 1979. The per mu yield was 723.5 jin, an increase of 14.3 percent over that of "guang tang ai."

The variety has a plant height of about 90 centimeters, the stems are intermediately clustered, the growth trend is prosperous and the nodes are exposed, the leaves are relatively wide, the tillering strength is intermediate, heading is uniform, each panicle has about 100 grains, the fruiting percentage is about 85 percent, the thousand grain weight is between 20 and 21 grams, the color of the grain is coarse brown and the husk is thin. It is only lightly affected by

bacterial blight and sheath and culm blight but during the late period of growth the leaves show reddish brown spots and manifest early withering. At the same time the leaves easily grow profusely. It is suitable for planting in fields of medium fertility.

Key points of cultivation: The healthy seedlings cultivated for about 40 days can be reasonably densely planted. When planting in infertile fields, mountain ditch fields and sandy fields, the number of transplanted seedlings should be appropriately increased. Sidedressings to strengthen the ending period of growth should be applied timely. During the late period of growth, irrigation should not be terminated too early. The seeds must be sanitized before sowing to prevent profuse growth.

Hybrid Rice Combinations

Guangzhou GUANGDONG NONGYE KEXUE [GUANGDONG AGRICULTURAL SCIENCES] in Chinese
No 3, 8 May 80 pp 54, 37

[Article by Wei Sirian [7614 2448 3240] of the Agricultural Science Institute of Xingning County: "New Combinations of Hybrid Rice--'Zhen Shan 97A' x 'KE 30'"]

[Text] The new heterosis combination produced by the agricultural science institute of the Xingning County--"Zhen shan 97A" x "ke 30" ("shan you ke 30"), is suited for planting as a late crop. After 3 years of regional evaluation and test planting, it showed a prosperous growth trend, a strong tillering strength, uniform heading, abundance of grains and large panicles, a better resistance to bacterial blight, a good color during maturation in the late period of growth, early maturation, conservation of fertilizers and high yield. Its entire growth period is about 125 days, generally yielding 700 to 800 jin per mu, sometimes reaching 1,000 jin.

This hybrid was combined in the winter of 1976 on Hainan Island where seeds of "shan you ke 30" were first obtained. In the late crop in 1977, it participated in the provincial heterosis regional experiment sponsored by this institute. The entire growth period was 124 days, each panicle averaged 165 grains, the fruiting percentage was 87.3 percent, the thousand grain weight was 27.4 grams, the average per mu yield of small zones was 1,086.6 jin.

In the late crop of 1978, it participated in the heterosis demonstration experiment organized by the provincial seed company at this institute. The ordinary varieties "er bai ai," "gui chao No 2" and "guang tang ai" were used as standard varieties. The experiment was conducted over large areas of fields separately fertilized by 10 jin of pure nitrogen per mu (medium fertility area) and by 20 jin of pure nitrogen per mu (high fertility area). The results in the medium fertility area showed that the entire growth period of "shan you ke 30" was 129 days, the yield led all the 15 varieties that participated in the experiment, and per mu yield was 884.2 jin, an increase of 31.9 percent in yield over "er bai ai," 24.3 percent over "gui chao No 2," and 54.6 percent over "guang tang ai." In the high fertility area, the entire growth period of "shan you ke 30" was 131 days, the yield was the second highest (following only "wei you No 6"), and per mu yield was 718 jin, an increase of 22 percent in yield over "er bai ai," 13.2 percent over "gui chao No 2," and 29.1 percent over "guang tang ai."

In the late crop of 1979, the provincial coordination and cooperation group included it in the regional evaluation at 8 localities. Nine varieties participated in the test. "Shan you ke 30" ranked second with an average per mu yield of 774.6 jin, an increase of 10.2 percent in yield over "gui chao No 2," and 9.88 percent over "shan you No 2."

Because the growth periods of "zhen shan 97A" and "ke 30" are not very different, seed propagation was easy and successful. Take 1978 for example, the restorer line "ke 30" was sown in three phases 8 to 10 days apart between 18 February and 9 March. The first and second sowings were transplanted on 6 April. The third sowing was transplanted on 16 April. When the sterile line "zhen shan 97A" was sown on 8 April, the first sown restorer line had 7 leaves, the second sown had 5.8 leaves. The first sown restorer line required 113 days from sowing to the beginning of panicle formation. The second sown required about 109 days and the third sown required about 102 days, while the sterile line required 65 days. The greatest time gap between the male and the female parents has to be controlled to within 48 days so that the flowering periods will meet. Per mu yield during seed propagation is about 100 jin.

9296
CSO: 4007

BRIEFS

STATE FARM ACHIEVEMENTS--Hebei has 31 state-operated agricultural-livestock farms with a total of 1.53 million mu of farmland and more than 90,000 workers. In 1979 they scored the following gains over 1978: total grain-bean output up 10 percent; grain turned over to the state up 20 percent; production of grain, oilseeds, meat, milk, fruits and aquatic products also registered various degree of increase; profits totaled 30 million yuan--up 10 percent. [Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 2, 24 Feb 80 p 25]

CSO: 4007

EXPERIMENTS TO ACHIEVE HIGH, STABLE SOYBEAN YIELDS

Nanjiang Region

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 1, 15 Jan 80 p 18

[Article by Qi Wenshi [7871 2429 1102] of the Laolai Middle School of Nabe County, Heilongjiang Province: "Measures to Produce High Yields of Soybeans in Cold and Cool Regions"]

[Text] Our school is located in the northernmost part of the Nanjiang region. In ordinary years, the frostless period lasts 110 days. We began to study measures of cultivation to produce high yields of soybeans in 1975, and we achieved good results. For 4 continuous years (over 5 mu in area) the per mu yield all surpassed 400 jin. We used the early maturing variety feng shou No 11 which has a strong stalk, resists lodging, is tolerant to fertilizers and dense planting and we also implemented the following measures:

I. Dense Planting in Narrow Rows

Early maturing varieties are small in size, the yield of the single plant is low, and if the colony is not enlarged to assure the number of plants, per mu yield cannot be increased. But, early maturing varieties are short, they have strong stalks, they are resistant to lodging, and their plant type is clustered, and they are suitable for increasing the planting density. These make up for the weakness of low yield of the single plant of early maturing varieties.

For the past 4 years, we used a row distance of 30 centimeters or 35 centimeters for flat seeding. Although the number of soybeans per mu suddenly increased from 27,000 plants to 40,000 plants per mu, the space between the plants and the space between rows were rationally planned and the structure of the colony was more coordinated than planting on ridges. Even though the plants were very densely planted, the plants were not overly shaded. According to our 4 years of surveys, the area of green leaves of plants flat sown in narrow rows visibly increased over that of plants planted on ridges. The leaf area index at the time of forming the pods reached 5.5. Because the leaf area increased, photosynthesis strengthened, and this helped raise the yield.

II. One Stimulation Is Effective to the End

Early maturing varieties like fertilizers and water. Their stems are strong, the plants are shorter, the growth period is short, and all of the growth stages are concentrated. To satisfy the needs of vegetative growth and reproductive growth of early maturing soybeans, to stimulate vegetative growth and the accumulation of dry substances, to assure the colony reaches a definite prosperity, we used spring stimulation, summer stimulation, stimulation in ordinary years, or the method of one stimulation that is effective to the end.

(1) We selected secondary marshlands of fertile soil that had a loose texture and that preserved water and fertilizers to plant early maturing soybeans. Such land has a good fertile foundation, moisture is sufficient, and the need for moisture throughout the entire life of the early maturing soybeans can be satisfied. In addition, the soil must be deeply turned up to thicken the active soil layer and the surface must be prepared, leveled, raked and refined year after year to overcome the weaknesses of early maturing soybeans which have few root nodules and which have a weak ability to fix nitrogen. These measures provide a good foundation for the early maturing soybeans to grow a prosperous root system and more root nodules and fix more nitrogen.

(2) Increasing the application of farmhouse manure and skillfully utilizing chemical fertilizers and applying well trace elements means using fertilizers to assure the yield.

1. Applying base manure and fertilizers for seeds: According to our observations, during the seedling period of soybeans, the root nodules have not yet formed. Even when the plant has grown two true leaves and when the naked eye can see the root nodules, because they cannot fix nitrogen, they are ineffective root nodules. This period, we believe, is the period of nitrogen deficiency in soybeans. In addition, early maturing varieties are more sensitive to the effects of fertilization than medium and late maturing varieties. Therefore we should apply fertilizers to specifically satisfy this characteristic of early maturing soybean varieties. Besides applying 6,000 jin of decomposed dung as base manure per mu, 10 jin of ammonium nitrate per mu were also applied, and 20 jin of calcium superphosphate were applied as fertilizers for seeds to satisfy the needs of growth of the soybean plants during the seedling period.

2. Sidedressings:

After soybean flowers, the plant enters a period of alternate vegetative and reproductive growth. According to our surveys, the time from sowing of early maturing soybeans to flowering lasts 52 days. The dry weight of the single soybean plant is 9 grams, constituting 31.4 percent of the biological yield of the single plant. The time from the emergence of the first flower to maturation lasts 50 days. The dry weight of the single plant of soybean is 19.8 grams, constituting about 68.6 percent of the biological yield of the single plant. It can thus be seen that about two-thirds of the dry weight of the soybean plant is formed after flowering. Therefore, the flowering period, the pod forming period and the period of formation of the bean require massive amounts of immediately effective nitrogen and phosphorus. During this period, relying only on the original fertility in the soil and the fertilizers applied frequently cannot satisfy the needs of growth and

development of soybeans. During this period, we applied phosphorous sidedressing and also applied 5 to 10 jin of ammonium nitrate as sidedressing. These measures served importantly to satisfy the need of growth of feng shou No 11 soybean plants and to assure sufficient fertilization for the plants to achieve a certain height and to preserve their flowers and pods.

3. Ammonium molybdic acid mixed with the seeds: Ammonium molybdic acid is a kind of trace element fertilizer. It can increase the capability of the root nodules to fix nitrogen and stimulate soybean's absorption and conversion of nutrients. We mixed 25 grams of ammonium molybdic acid and 150 jin of seeds and achieved better results equivalent to an increase of 8 percent in yield.

(3) Spraying sodium hydrosulphite during the peak flowering period:

Sodium hydrosulphite is a suppressant of photosynthetic respiration. Spraying sodium hydrosulphite on soybeans is a chemical method to raise the photosynthetic efficiency of soybeans. This is a good method to achieve high yields of soybeans. According to the 4 years of experiments conducted at our school, spraying 60 to 100 ppm of sodium hydrosulphite during the peak flowering period can produce an increased yield of from 11 to 22 percent.

III. Timely Late Sowing

Timely late sowing can avoid dryness in spring and benefits the preservation of seedlings. Inducing weeds to grow early benefits weeding before sowing. Timely late sowing can also make the soybeans flower and fruit after the rainy season starts and this benefits the preservation of flowers and increases the formation of pods. The growth period of feng shou No 11 is 100 days, and in our area it can be sown 10 days late. When sown on 1 June, soybeans can mature normally and completely before frost occurs.

Harkin Area

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER], in Chinese No 1, 15 Jan 80 p 19

[Article by the Soybean Research Institute of the Heilongjiang Academy of Agricultural Sciences: "How to Produce High and Stable Yields of Soybeans?"]

[Text] From 1970 to 1977 we conducted research and experiments in the techniques of cultivating high yield soybeans and their patterns in the Harbin area. Per mu yield basically was above 400 jin. The highest yield of 416 jin was reached in 1977. The major measures and techniques of cultivation used to produce a per mu yield of 400 jin of soybeans are comprehensively described below:

I. Establish the Four Foundations Well

(I) Good soil structure:

A high soil fertility and a good soil structure are the foundations for realizing high and stable yields of soybeans. Fields that produce high yields year after year are improved by effective measures over many years. For example, greatly

increasing the application of grassy charcoal, using green manure to improve the soil and returning stalks and stems to the fields all increased the efficiency of fertilizers in the soil and improved the soil's physical properties greatly. In general, the indicators of soil that can produce high yields of soybeans are: (1) A rich content of organic substances. High yielding fields all have a content of organic substance of over 4 percent. (2) A deep and thick active soil layer. Soybean is a deep root crop. The deeper the active layer of soil the more beneficial it is to the development of the root system. Practice shows the active soil layer of generally high yielding fields is always about 25 to 30 centimeters. (3) A good soil structure. The texture of the soil is loose, and "irrigation, fertilization, aeration and warmth" of the soil are good. (4) An appropriate compactness. The soil's unit weight is between 0.7 grams/cubic centimeters and 0.8 grams/cubic centimeters. (5) Sufficient moisture in the soil. Especially after soybeans flower, the content of moisture in the soil generally should remain at 25 to 28 percent.

(II) Increase the application of manure:

Soybean is a type of crop that needs relatively more fertilizers. The characteristic need for fertilizers is different from other crops. Therefore, skillful application of manure as fertilizers seems to be especially important. In order that the vegetative growth and reproductive growth of soybeans can develop evenly, in order to assure that a healthy vegetative body is formed during the early period of growth, in order that the soybean plants do not grow too prosperously causing overly prosperous growth and lodging and shatt ing of massive amounts of flowers and pods and reducing the yield, it is especi..y important to greatly increase the application of manure fertilizers having a high content of organic substances before turning over the soil in autumn. This is very beneficial to nurturing the fertility of the soil and increasing the yield of soybeans in that year. Because organic fertilizers are mostly complete fertilizers, the effect of fertilization is stable and long lasting, and at the same time, organic substances can release carbon dioxide during the process of decomposition and decay. This intensifies photosynthesis. After organic fertilizers have been applied in the soil, they can improve the soil's physical properties and increase granular structure so that the soil's permeability is good. According to the results of experiments in cultivation of high yields and the experience of many high yielding units, when the per mu yield of soybeans stabilizes at 400 jin, each mu requires an additional application of superior quality farmhouse manure of 5,000 to 7,000 jin as base manure, at the same time, appropriate amounts of sidedressings of chemical fertilizers are needed after the seedlings have been set according to the fertility or infertility of the soil and the trend of growth of the young seedlings. Generally, each mu requires a sidedressing of 20 to 30 jin of calcium superphosphate, 20 jin of ammonium nitrate and 10 jin of potassium sulphate.

(III) Grasp full seedlings and even seedlings tightly:

There are many factors that affect the full seedlings and even seedlings of soybeans. But the major factor is careless preparation of the fields and careless sowing of the seeds. Therefore, the following two measures and techniques must first be grasped well.

1. Carefully till the soil deeply and prepare the fields. It has been realized in production practices that the major advantages of deep tilling and fine planting are that they create a deep and thick active soil layer, improve the physical condition of the soil, increase the capability to retain water and fertilizers, raise the soil's fertility, and eliminate the spread of weeds. According to the survey conducted by the 853 Farm of the Administration Bureau of the Hong Xing Long Farm, the weight of 100 beans of soybeans can be raised by about 2 grams when the soybean plants are planted in fields deeply tilled to 30 centimeters than fields shallowly tilled to 20 centimeters, and 53 jin more soybeans can be harvested per mu, amounting to an increase of 12 percent. But deep tilling must be combined with fine raking. Only by assuring the quality of deep tilling and fine raking can the permeability of the soil become good so that the soil's surface is fine and even and the amount of granules is reduced, thus creating good conditions for smooth sowing of soybeans and smooth emergence of the young seedlings from the soil.

2. Using advanced sowing methods and raising the techniques of sowing. The emergence of many high yielding types are closely related to advanced sowing methods. Only by using advanced sowing methods can the problems of thinness, density, unevenness, nonuniform depth and shallowness, lack of seedlings and broken seedlings be completely solved. The major advanced sowing methods used for many high yielding types are: (1) Dibbling or bunch planting with precise amounts of seeds on ridges. (2) Mechanized double drilling on ridges. (3) Mechanized flat seeding and then forming ridges or flat seeding in narrow rows and dense planting. Regardless of which method and what tools are used, sowing is a means, the goals are to achieve full seedlings and even seedlings. Therefore, grasping hold of moisture conditions, even seeding and uniform covering by the soil must all be done to preserve and to keep even seedlings according to predetermined density.

(IV) Using varieties that have strong stems and that do not lodge.

II. Grasp the Four Links Tightly

(I) Stimulate healthy seedlings:

Temperatures in early spring in our province are low, the soil is cold, the climate is dry and there is a lot of wind. The natural conditions are very unfavorable to the growth of the young soybean seedlings. Because of the rusting disease of young seedlings, the yield is greatly affected. According to surveys, with the presently available superior varieties, all varieties that grow healthily and rapidly during their seedling period show a trend of increased yield. Major measures to stimulate healthy seedlings are: thinning of the seedlings, grasping weeding and banking soil tightly, loosening the soil, applying sidedressings of chemical fertilizers according to the conditions of the seedlings, eliminating weeds, raising the temperature of the soil to help the growth of healthy seedlings, in particular, forming ridges and trenches and loosening the soil deeply during the seedling period produce even better results.

(II) Grasp stable growth:

After soybean flowers, the temperature continues to rise and the rainy season gradually approaches, growth and development are the most prospereus, and the plants

enter the period of alternate vegetative and reproductive growth. But at this time, if the growth of the vegetative body is overly prosperous, the plants will close and growth will be overly prosperous. This will even cause lodging, reduce the number of flowers and create massive shattering of the flower pods, affecting increases in yield. Therefore, as soon as the leaves are observed to be fresh green in color and are dense and prosperous, and the internodes are visibly extending, immediate measures must be taken to control the situation to suppress overly prosperous growth, such as spraying 2,3,5, tri-iodobenzoic acid which can raise the yield of soybeans by 5 to 15 percent.

(III) Prevent damage by insects:

The major insects that affect the yield and quality of our province's soybeans are bean aphids and core borers. Bean aphids occur every year continuously at all localities. When the weather is dry and arid, damage is even worse. According to surveys, after damage by bean aphids, the yield is affected and the damage causes viral diseases to spread, further creating serious reduction in the yield of soybeans. When damage by bean aphids is discovered, dimethoate or dichlorvos chemicals should be used to spray the plants for prevention and control and to eliminate the damage. In recent years, the core borer has developed and is widespread in the southern regions. If it is not prevented and controlled, it will seriously affect yield and quality. According to forecasts and determinations by sight, during the middle 10 days of August when the soybeans are filling and when groups of adult core borers are discovered flying about, emulsion of dichlorvos can be placed on poles for prevention and control.

(IV) Stimulate early maturation:

At present, the major measures to stimulate early maturation are: Besides using relatively early maturing and stable yielding varieties, the main measure is to loosen the soil deeply during the seedling period and to use loosening of the soil and raising the ground temperature to stimulate healthy growth of the young seedlings. During the middle period of growth, when overly prosperous growth is discovered, chemical agent 2,3,5 tri-iodobenzoic acid which stimulates healthy growth of the stems should be sprayed in time to prevent lodging and to stimulate early maturation. Concentration of the chemical should generally be 100 to 150 ppm. In some cases, sodium hyddrosulphite which is a suppressant of photosynthetic respiration is sprayed during the beginning flowering period. Generally the concentration is 100 ppm. It is sprayed once a week starting from the beginning flowering period and is sprayed a total of three times. This can stimulate the plants to mature 3 to 5 days earlier. During the latter growth period, the fields are weeded. This will also stimulate early maturation.

III. Irrigation

Moisture is indispensible to soybeans. Only with sufficient moisture can the nutrients be dissolved in water for the soybean to absorb and utilize. According to research and experimental results of cultivation of high yielding soybeans, after soybeans flower, and when the soil's moisture remains at 25 to 28 percent, the per mu yield can stabilize at above 400 jin. Especially under dry and arid conditions, irrigation during the yellowing period of leaves can cause the weight

of 100 beans to increase greatly. In 1976, Hei nong No 26 variety was used for testing. The weight of 100 beans produced by the plants that were irrigated was almost 5 grams more than those produced by plants not irrigated. At the same time, according to surveys, when the moisture in the tilling layer of the soil drops to below 18 percent, soybean plants grow slowly, the leaves gradually become dark green, withering occurs at noon, and cracks occur on the surface layer of the soil. These are manifestations of dryness and aridity and deficiency of water of soybean plants. This time should be grasped for timely irrigation. This will visibly increase the yield of soybeans.

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CSO: 4007

BRIEFS

HEILONGJIANG SNOWSTORM--Hejiang Prefecture, Heilongjiang Province, is combating a great snowstorm rarely seen in the past 40 years. About 3 million mu of crops in the prefecture were covered by snow. The Hejiang Prefectural CCP Committee and administration office have issued an emergency circular urging the people to harvest as much grain as possible. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 29 Oct 80 SK]

STATE FARM CADRE TRAINING--In 1979 alone, 676 state farm management and technical training classes were set up in the Reclamation Area of Heilongjiang with a total enrollment exceeding 55,760. As a result, 40 percent of cadres at the state-farm level and 33 percent of cadres at the production company level were trained through a rotational system. Despite severe drought and other natural calamities, the total grain/bean output in the Reclamation Area last year might reach 5.53 billion jin, a record harvest and a 13.5 percent increase over 1978. The estimated amount of commercial grain turned over to the state was 2.7 billion jin. Last year's operation yielded a small profit following many years of financial losses. The loss in 1978 alone was 110 million yuan. [Beijing ZHONGGUO NONGKEN [CHINESE AGRICULTURAL RECLAMATION] in Chinese No 3, 24 Mar 80 p 2]

CSO: 4007

BRIEFS

RESPONSIBILITY SYSTEMS--Thanks to the strenuous efforts of the party committee of Sheyang County, Jiangsu, various forms of system of fixed responsibility in production have been established by some 70 percent of the county's 3,800 production teams since last year. A meeting was called recently to discuss further promotion of this system throughout the county. As of 15 October some 280,000 mu of paddy field were completely harvested and 270,000 mu of wheat and barley sowed. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 26 Oct 80 OW]

JIANHU COUNTY COTTON HARVEST--Commune members in Jianhu County, Jiangsu, have actively harvested and sold cotton. From 28 September to 15 October, they have harvested more than 10,000 dan of unginned cotton and sold 3,700 dan of ginned cotton to the state. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 24 Oct 80 OW]

TONGSHAN AUTUMN SOWING--Some 270,000 persons in Tongshan County of Jiangsu have been mobilized to dig ditches to protect 650,000 mu of farmland from continuous rainfall which was reported since 4 October. By 12 October some 670,000 mu of autumn crops were planted, or 52 percent of the county's sowing plan. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 18 Oct 80 OW]

XUZHOU PREFECTURE WHEAT SOWING--Some 700,000 persons in Xuzhou Prefecture of Jiangsu have been mobilized to do a rush job of planting 4.1 million mu of (wheat). Because of an unbroken spell of wet weather since early October, waterlogging was reported in some 1.8 million mu of farmland in Xuzhou Prefecture. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 19 Oct 80 OW]

RAIN HELPS SOWING--It rained in Xuzhou Prefecture of Jiangsu between the evening of 4 October and morning of 6 October. The average rainfall in eight counties and one municipality was 20.4 mm. This relieved the drought conditions in this area and is very helpful to the autumn sowing of wheat, barley and naked barley now under way. [Nanjing XINHUA RIBAO in Chinese 7 Oct 80 p 1]

HIGHER CROP OUTPUT POTENTIAL--Eighteen experimental plots of about 100 mu each were set up throughout Jiangsu last autumn to try out scientific cultivation method for achieving higher wheat yield. Statistics given at a conference held in mid-August this year showed that the average per-mu yield was 911 jin from a total of 1,786.68 mu, of which 397.91 mu yielded more than 1,000 jin per mu. In addition to these experimental plots, 38 counties have reported that their total areas of wheat, barley and naked barley fields producing 1,000 jin per mu have been expanded this year to twice that of the previous year. This indicates the great potential of increasing the output of these three crops in Jiangsu. [Nanjing XINHUA RIBAO in Chinese 14 Sep 80 p 3]

FISH RAISING EXPANDED--Since the relaxation of policies on the use of water surface, the number of production teams engaged in fish raising activities has been raised in the past 2 years from 100,000 to 170,000, or 54 percent of the total number of production teams in the province. The total production of fresh-water fish for the first half of this year registered a 23-percent increase over the same period last year. Moreover, the fish raising area has been recently expanded by more than 200,000 mu, and the total area used by communes, production brigades and teams for raising fish accounted for 86 percent of the fish raising areas in the province. [Nanjing XINHUA RIBAO in Chinese 28 Aug 80 p 2]

CSO: 4007

BRIEFS

MINOR AUTUMN HARVEST--Jilin Province has completed its minor autumn harvest. As of 20 October, the total output value of minor autumn crops was 65.77 million yuan, of which 32.24 million yuan were native products and 33.52 million yuan were medicinal herbs. [Changchun Jilin Provincial Service in Mandarin 2200 GMT 30 Oct 80 SK]

CSO: 4007

BRIEFS

OIL-BEARING CROPS--The total output of the 4.37 million mu of oil-bearing crops in Liaoning Province is 510 million jin this year, 41.2 percent higher than in 1979. As of 26 October, 140 million jin of oil-bearing seeds had been procured. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 30 Oct 80 SK]

SUPPLY, MARKETING COOPERATIVE--Supply and marketing cooperatives at all levels in Liaoning Province have established 120 joint ventures with communes and other departments. These joint ventures can be divided into four categories: supply and marketing cooperatives invest funds to cooperate with production teams to engage in the processing industry; supply and marketing cooperatives cooperate with communes to establish joint stores to sell the communes' farm and sideline products; supply and marketing cooperatives invest funds to help production units produce badly needed goods and are compensated with goods in 3 to 5 years; and supply and marketing cooperatives invest funds and goods to establish joint stores with communes or enterprises in cities by utilizing the facilities of these communes or enterprises. [Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 29 Oct 80 SK]

CSO: 4007

ERRONEOUS REPORT ON LIVESTOCK DECREASE CORRECTED

Beijing RENMIN RIBAO in Chinese 9 Sep 80 p 1

[Letter to the Editor: "'Drop in Livestock Output in Nei Monggol' Is Untrue"]

[Text] Editor's Note: This letter from the Animal Husbandry Bureau of the Nei Monggol Autonomous Region reveals an example of serious bureaucraticism in our leading organs. As we understand it, this bureau had submitted a report to the concerned central departments prior to July on the increase in livestock in the whole region. How could such a formal report be ignored and someone's "estimation" be used to determine that livestock had decreased in an autonomous region? This newspaper is also to blame for reporting this news item without first verifying it.

To the Editorial Department of RENMIN RIBAO:

The headline report on the first page of RENMIN RIBAO on 4 September, which carried XINHUA's item entitled "Our Country's Animal Husbandry Achieves a Relatively Large Increase in Output This Year," mentioned that "With the exception of the Nei Monggol Autonomous Region, where conditions were serious and livestock output has dropped, conditions in the pastoral areas as a whole are better than last year." This news item, broadcast by the Central People's Broadcasting Radio Station in a joint program on the evening of 3 September, was totally not in accord with the actual conditions of animal husbandry in our region. It is entirely erroneous to call an increase in output a decrease.

On 4 September, not having seen RENMIN RIBAO and not knowing how the article originated, we first checked with the XINHUA branch agencies, radio stations, and newspaper offices throughout the autonomous region, none of which had any knowledge of its origin. We then immediately contacted the Central People's Broadcasting Station, RENMIN RIBAO, and the XINHUA head office. According to the XINHUA head office, "The original text of this article did not include the statement concerning a decrease in livestock output in the Nei Monggol Autonomous Region; this was inserted by the Animal Husbandry General Bureau of the Ministry of Agriculture when it examined the text of the article."

We got in touch with the Animal Husbandry General Bureau to examine and verify how the question of livestock decrease in the Nei Monggol Autonomous Region arose.

Director Zheng of the bureau's office spoke evasively, saying that they "recently heard that the drought in Nei Monggol is serious. A decrease in livestock is an estimate" and "can be regarded as such if the increase in output is slight." We gave a different opinion, reported last June's survey figures to the Animal Husbandry General Bureau, and requested that a correction be carried in the newspaper.

On 5 September, the bureau called to say that, after a joint study with RENMIN RIBAO, it had decided to correct the report. It also said that in order to give consideration to the original text, the correction resulting from concrete study would read: "Although the Nei Monggol Autonomous Region has suffered relatively serious disasters since last year, with the exception of a drop in livestock output in specific areas, the region as a whole had a 19.5-percent increase in livestock, or a net increase of 3.9 percent, which completed the original plan and task."

Please publish the above in your newspaper in order to clarify the truth.

Animal Husbandry Bureau, Nei Monggol Autonomous Region

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BRIEFS

OIL-BEARING CROPS--Yinchuan, 25 Oct (XINHUA)--A bumper yield was reported from 1.27 million mu of oil-bearing crops in Ningxia Hui autonomous region this year. Total output topped last year by more than 35 percent. Ningxia's sown acreage under oil-bearing crops in 1980 tops last year by 22 percent. In areas where farmland is irrigated by the Huanghe River, total output reached some 30 million catties this year. [Beijing Xinhua Domestic Service in Chinese 0120 GMT 25 Oct 80 OW]

RICE OUTPUT--Yinchuan, 27 Oct (XINHUA)--The newly reclaimed zones in Ningxia Hui autonomous region, which use Huanghe water for irrigation, have conducted scientific farming in 1980, succeeding in raising rice output. There are 700,000 mu of paddy fields in these zones, and the total output may reach 600 million jin. This will be 20 percent higher than the 1979 record. [Beijing Xinhua Domestic Service in Chinese 0137 GMT 27 Oct 80 OW]

SUGAR-BEET PRODUCTION--Yinchuan, 29 Oct (XINHUA)--Ningxia Hui autonomous region reaped a bumper harvest of sugar-beet this year, with the total output amounting to 70 million jin, or doubling the total amount actually procured in 1979. Since 1979, the autonomous region has attached great importance to sugar-beet production, formulated a reward system, readjusted the procurement price and succeeded in raising the commune members' enthusiasm in sugar-beet production. The area planted to sugar-beet throughout the region was expanded to some 39,000 mu this year, or an increase of 56 percent over that of 1979. [OW310635 Beijing Xinhua Domestic Service in Chinese 0750 GMT 29 Oct 80 OW]

PINGLUO COUNTY PRODUCTION READJUSTMENT--Yinchuan, 20 Oct (XINHUA)--Pingluo County in Ningxia Hui Autonomous Region has effected a structural reform in agriculture, forestry and animal husbandry with success. This year the county reduced its wheat acreage from 230,000 to 210,000 mu in favor of planting cash crops. Since spring the county has afforested 7,800 mu, planted 3.6 million trees around houses and villages and along roads and rivers, planted grass to some 7,000 mu and built more than 10,000 mu of basic pastoral farms. [Beijing XINHUA Domestic Service in Chinese 0224 GMT 20 Oct 80 OW]

CSO: 4007

BRIEFS

GRAIN OUTPUT--Qinghai Province has reaped a bumper grain harvest in 1980. The total grain output increased by 10 percent over 1979. Average food grain distributions for commune members in 14 counties in the farming areas increased from 30 to 60 jin over 1979 figures. [Xining Qinghai Provincial Service in Mandarin 2330 GMT 29 Oct 80 SK]

QINGHAI RIVER--The Qinghai Provincial Water Conservation Association recently held a seminar on harnessing the Huangshui River. Seminar participants noted there are 2 million shallows in the Huangshui Valley. Vigorous efforts should be made to transform the shallows, thoroughly harness the river and improve the water and soil conservation to minimize soil erosion, conserve water and improve the ecological balance. Severe droughts in recent years have threatened farm and livestock production in the Huangshui River Valley. Seminar participants advocated completion of projects of neighboring water conservation works so they may retain more water and divert it into the Huangshui River when it becomes dry. They also want to build a dam in the upper reaches of the river to control it. [Xining Qinghai Provincial Service in Mandarin 2330 GMT 27 Oct 80 SK]

PREFECTURAL GRAIN PROCUREMENT--Huangnan Tibetan autonomous prefecture completed the grain procurement task as of 20 October. The total grain output in the entire prefecture increased by 1.1 million jin over that of 1979. Thanks to effective measures, key grain producing communes and brigades in the outskirts of Xining municipality also accelerated its harvesting and threshing operations, fulfilling the grain procurement task ahead of schedule. [SK260613 Xining Qinghai Provincial Service in Mandarin 2330 GMT 25 Oct 80 SK]

LIVESTOCK INCREASE--Qinghai Province has scored fairly good achievements in animal husbandry production this year owing to favorable weather and the success in implementing the production policy. The number of animals raised in the province now surpasses the figure of the corresponding 1979 period by 510,000 head. [SK271225 Xining Qinghai Provincial Service in Mandarin 2330 GMT 26 Oct 80]

CSO: 4007

RATS CAUSING HEAVY CROP DAMAGE IN MANY AREAS

Jinan DAZHONG RIBAO in Chinese 23 Aug 80 p 1

[Report by Zhai Ziheng [5049 1311 1854], Li Zhaoyin [2621 0664 0603], Cui Yuduo [1508 3768 6995], and Zhao Guangrong [6392 1684 2837]: "Masses in Pingying, Tengxian, Ningyang, Dongping and Other Areas, Complaining That Rats in Packs Destroy Crops in Daytime, Ask Leadership and Scientific Research Units To Pay Attention to Measures To Eradicate Rats"

[Text] The masses in Pingying, Tengxian, Ningyang, and Dongping and other areas have written to the editor that damage by rats in farm villages is serious. Food grains, melons, fruits, and vegetables have been badly damaged. Rats come in packs in the daytime and destroy the crops. The masses are very worried. Over 80 percent of a mu of melons near Ligou in Pingying was eaten up by rats in one night. Every piece of land of the 12,000 mu of peanuts in Xiazhuang Commune in Tengxian has been damaged by rats. Some losses amount to 10 percent. Caretaker Jiang Yuliang [5592 3768 5328] of this commune's food grain management office crushed a pear, mixed poison in it, and scattered the poisoned pear in the field. After half a day and one night, 43 rats were killed by the poison. The masses and the party cadres of the Yangshan Brigade of Dongshahe Commune in Tengxian and scientific and technical personnel of concerned provincial departments placed 300 rattraps in the fields where rats had already been killed. Overnight, 110 rats were killed by the traps. Using poisonous bait and using rattraps are very effective methods.

Why do rats become a plague in some places? According to an analysis by the masses of various localities, the main reason is that the four natural enemies of rats have become extinct in many places. According to the masses in Tengxian, in the past there were many foxes in the eastern hilly regions of this country, and there were even more yellow weasels. The cries of owls could be heard echoing between the mountain valleys, and the masses kept cats to catch the rats. Now, the rats do not have these four natural enemies, and thus their offspring are abundant and cause serious damage. The masses are calling upon the leadership and scientific and technical departments at all levels to pay attention to the study of how to effectively eliminate damage by rats.

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CSO: 4007

FARM PRODUCTS MARKETS ACTIVE; COMMODITY PRICES LOWER

Jinan DAZHONG RIBAO in Chinese 20 Aug 80 p 1

[Report by Su Guoxi [1372 0948 3886] and Wang Jiuhu [3769 0036 4375]: "Business of Farm Byproducts Markets in Our Province's Cities and Towns is Active"]

[Text] By the end of June, 87 farm byproducts markets were open in the nine provincial- and prefectural-controlled municipalities of Jinan, Qingdao, Zibo, Zaozhuang, Yantai, Weihai, Weifang, Jining, and Dezhou. In county towns and industrial mining districts, 147 such markets were open. During the first half of this year, the business volume of farm byproduct markets in provincial- and prefectual-controlled municipalities was over 46 million yuan--1.2 times higher than the same period last year. The business volume of 10 commodities, including grain, edible oils, pork, beef, lamb, poultry eggs, aquatic products, vegetables, dried fruit, and oil stuffs, exceeded 118 million, which is equivalent to 7.4 percent of the total sale volume of similar commodities in state operatives in municipal areas. As commodities on the market drastically increase, the prices of market transactions decrease. The average market price based on the statistics of 24 chief commodities has decreased by 18.3 percent compared with the end of last year. Variations between list and market prices have appeared for some commodities. The market price of live geese, for instance, is 9.37 percent lower than the list price, while that of apples is 21.43 percent lower.

The opening of farm byproduct markets in cities and towns not only makes life more convenient for staff workers but also provides an important place for production teams and commune members to sell their spare products. Of the total business volume of farm byproduct markets in the first half of this year, 63.8 percent was sold directly by rural commune members, 18 percent by production teams, 16.2 percent by retailers, and 2 percent by other personnel.

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CSO: 4007

COMPLAINT OVER CHEMICAL FERTILIZER REWARD BRINGS ACTION

Jinan DAZHONG RIBAO in Chinese 29 Aug 80 p 2

[Letter to the Editor: "Chemical Fertilizer Reward Sale from Grain and Oil Should Be Honored Without Delay"]

[Text] According to policy stipulations, after a commune production brigade completes its task of exclusive purchase of grain and oil, a reward sale of 125 jin of chemical fertilizer is given for every 100 yuan sold in excess. Last year, the Zhaoxian Commune exceeded the exclusive purchase of grain by 6.31 million jin and peanuts by 180,000 jin, bringing a reward of 1.1 million and 160,000 jin of chemical fertilizer, respectively. These two items add up to a reward sale of 1.26 million jin of chemical fertilizer. So far, 730,000 jin of the reward have been fulfilled, but 530,000 jin are still outstanding. The chemical fertilizer reward the year before last has not been honored, either.

In exceeding the sale of grain and oil, production brigade cadres figured closely that so much excess sale would bring a corresponding amount of chemical fertilizer. This fertilizer would be used for production the following year, which would increase the output of grain and oil by so much. They had included the use of this fertilizer in production plans for the following year. No one expected that the reward would become a "bad check." Grain output this summer has decreased. At first, expansion of management measures and compensation in the fall were planned. But now there is no fertilizer to use. The entire commune's 19,000 mu of paddy rice, 23,000 mu of corn, 20,000 mu of peanuts, and 21,000 mu of melons have already shown signs of fertilizer deficiency. Paddy rice in particular has not received sufficient chemical fertilizer, and a drop in output is already a certainty. If the 530,000 jin of outstanding reward sale of chemical fertilizer are received, this will undoubtedly take care of the urgent situation.

Not honoring the reward might even affect grain purchases this summer. Commune cadres said that "the reward sale policy is no longer effective," while production brigade cadres said that "since rewarded chemical fertilizer cannot be bought, we will not sell so much grain this year and will save some to exchange for chemical fertilizer." In the course of our investigation, we learned that one brigade has taken out 5,000 jin of excess wheat which would have been sold to the state, so that it can be used to exchange for chemical fertilizer.

We feel that the situation described above should draw the attention of concerned departments for a speedy resolution.

Zhang Jianling [1728 0494 0407] and Li Zundian [2621 1415 3013], Armed Personnel Department, Junxian County; Guan Xiwen [4619 6007 2429], Zhaoxian Commune

Editor's note: After it received the letter "Chemical Fertilizer Reward Sale from Grain and Oil Should Be Honored Without Delay," the Junxian County CCP Committee immediately called a meeting of those in charge of the units of financial transactions, supply and marketing, production resource corporations, and the grain bureau to earnestly examine the status of fulfilling reward sales of chemical fertilizer in the whole county. An investigative group was organized, and it conducted an in-depth investigation of the 88 production brigades in Zhaoxian Commune and listened to the views and requests of the cadres and commune members. The investigation confirmed that the situation described by Zhang Jianling and the other comrades is basically true. To deal with the existing problems, the County CCP Committee has taken two timely measures: (1) To explain to the cadres at the basic level and to the masses the current reward sale policy, proposing that concerned departments honor the reward sale of chemical fertilizer without delay. (2) To request that all communes strengthen the use and management of the reward sale. Production brigades benefiting from the reward sale must keep and check records, and the sale must be strictly honored by stages and in groups according to plan, without embezzlement or seizure. Their earnest and responsible attitude with regard to the masses' letters deserves praise.

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CSO: 4007

USE OF LIGHT, TEMPERATURE IN CROPPING SYSTEM

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 1, 5 Feb 80 pp 4-8

[Article by Ding Changling [0002 2490 7881], Grain Farming Laboratory, Crop Institute, Shanghai Agricultural Academy: "A Look at the Cropping System in the Suburbs in Terms of Use of Light and Temperature Resources"]

[Text] Light and temperature are important natural elements in grain production. How to make fullest use of solar energy to increase the efficiency of crop photosynthesis so as to increase the quantity of grains produced, and how to use grain crops in a way in which they are adapted to temperature conditions for the promotion of growth and development while avoiding harm from high and low temperatures are major problems in grain production that urgently await research. Consequently, analysis of the natural laws governing light and temperatures, rational adjustment of crop rotation and crop patterns so as to gain advantages while avoiding disadvantages in order to promote continuously high crop yields possesses major real significance.

1. Characteristics of the Use of Light Energy in Suburban Grainfields

An overwhelming amount of the energy absorbed by plants comes from the radiated energy of the sun. Man's consumption of grain depends chiefly on the photosynthetic action of green leaves, and involvement in research work on the cultivation of grain crops is nothing more than improvement of the rate of use of light energy by crops to increase output of grain. However, inasmuch as changes in radiated energy are fairly great from one year to another, they effect output in varying degrees. For example, during the past 20 years in the Shanghai area, the amount of solar radiation has annually averaged 749.6 million ± 41.25 million kilocalories per mu. The lowest was 675.2 million, and the maximum was 822.4 million kilocalories for a relative disparity of 5.5 percent. Possibly the reason outputs were high in some years and low in others was the result of radiated energy being high or low. Therefore, to use output as the sole indicator of the reasonableness of agricultural methods in years of different balance poses definite problems. Currently, "light energy utilization rate" is widely used both here in China and abroad as an indicator in the study of the use of light energy in open fields. Looked at in terms of the use of radiated energy, this seems somewhat better, but some problems with it still exist, because by light energy utilization rate is meant the efficiency with which crops use light energy to

produce dry material. As to whether these dry materials can be transported to the reproductive organs to form output of grains, is something that is far from being accurately revealed by the light energy utilization rate. Therefore, use of the light energy utilization rate as a sole indicator makes for a poor basis on which to judge whether or not agricultural methods are rational. It may be seen that study of the situation pertaining to the light energy utilization of grain crops requires overall consideration of how green leaves intercept and capture light energy as well as the proportion (the economic coefficient) occupied by these materials in the dry materials produced (the light energy utilization rate) and the output of grains occupies. The product of the light energy utilization rate and the economic coefficient, i.e. the efficiency with which crops utilize radiated energy to produce an output of grains, is termed the "light energy production rate" in this particular article, and its numerical value is as follows: light energy production rate = light energy utilization rate X economic coefficient (1)

light energy utilization rate in the formula = organic output X light energy conversion rate divided by light energy

$$\text{economic coefficient} = \frac{\text{output of grains (i.e. economic output)}}{\text{organic output}}$$

substitution formula (1) is thus:

$$\text{light energy production rate} = \frac{\text{organic output X light energy conversion rate}}{\text{light energy}} \times$$

$$\frac{\text{output of grains}}{\text{organic output}} = \frac{\text{output of grains X light energy conversion rate}}{\text{light energy}} \qquad (2)$$

The statistical data for output of grains required for the light energy production rate may be provided by the production departments, and calculations are also very easy to do. They may be used to analyze the situation in regard to light energy utilization and are a better means of checking on the reasonableness of agricultural measures.

(1) Changes in the Light Energy Production Rate of Grain Fields in Suburban Grain Fields

Shanghai's suburbs are located at the northern edge of the semitropics where light energy resources are abundant, providing beneficial conditions for the production of grain. During the last 20 years, as superior varieties have found more extensive use, improvements have been made in farming techniques, and increases have occurred in multiple cropping indices, grain output has rapidly developed. In 1978, annual grain output per mu was 1,606 jin, an increase of 122 percent over 1959 and almost 4 times the 437 jin of 1949. As grain output increased, the light energy production rate also increased in a straight line. In 1978, it was 0.499 percent (the light energy conversion rate being figured at 4.2 kilocalories per gram of carbohydrates), meaning that as a result of the activity of rice and wheat crops, about 0.5 percent of the sun's total radiation was used for output of grains, or that the efficiency was about 0.5 percent for

the conversion of radiated energy into output of grains, a 152 percent increase over the 0.198 percent of 1959. (If the economic factor is calculated at 0.5, the light energy utilization rate is virtually in a straight line and expressable in a formula as $y = 0.1851 + 0.01380x$, in which formula y is the light energy production rate and x is the year, with 1959 being year 0 and 1960 being the first year (Figure 1), with the remainder following therefrom. If light energy is calculated in terms of the average value of 750 million kilocalories per mu per year, then for every ton of grain output per year, the light energy production rate must be:

$$\text{light energy production rate (percent)} = \frac{2000 \text{ jin per mu per yr} \times 4.2 \text{ kilocalories/gram}}{750 \text{ million kilocalories per mu per year}} =$$

0.56 percent.

Extend the straight line in the graph, i.e. the speed of growth for the light energy production rate between 1959 and 1978, until the light energy production rate becomes 0.56 percent, and around 1986 an annual output of a ton of grain per year will be attained.

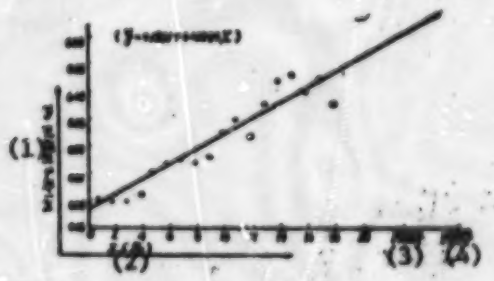

Figure 1. Growth of light energy production rate in suburban grainfields (1959-1978)

Key:

(1) Energy production rate (percent)
(2) X (year)
(3) 1982
(4) 1986

2. Relationship Between Light Energy Production Rate and Multiple Cropping Indices

Along with reforms in the farming system has come a rapid climb in the multiple cropping indices for grainfields in suburban areas. In 1959, the index was 1.59; in 1976, 2.52; and in 1978, 2.47 for an increase of from 55 to 58 percent. During the last 20 years, both the light energy production rate and the multiple cropping indices, as well as annual grain output have all gone up. The light energy production rate and the annual per mu yields of grain have risen almost parallelly, while there have been differences in the multiple cropping indices.

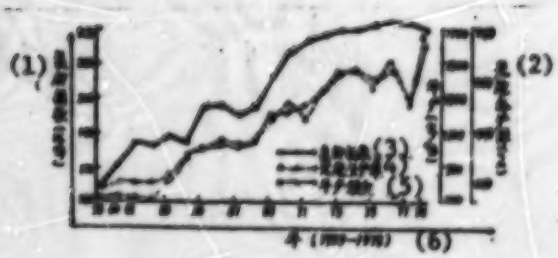

Figure 2. Relationship among light energy production rate, annual grain yields per mu, and multiple cropping indices

Key:

(1) Multiple cropping indices (times per year)
(2) Light energy production rate (percent)
(3) Multiple cropping indices
(4) Light energy production rate
(5) Annual grain yields
(6) Years (1959-1978)

Between 1959 and 1963, the multiple cropping indices rose rapidly, and the light energy production rate and annual per mu yields of grain rose somewhat more slowly than the multiple cropping indices. Between 1959 and 1962, there was little change (Table 1), and only in 1963 was there striking growth (Figure 2).

Table 1. Increases From 1959-1963 in Light Energy Production Rate, Annual Per Mu Grain Yields, and Multiple Cropping Indices

	(1)	(2)	(3)	(4)	(5)
	[illegible]年	60年	61年	62年	63年
(6) [illegible]	0.196	0.208	0.204	0.208	0.219
(7) [illegible](斤)	734	741	718	719	[illegible]
(8) [illegible](次/年)	1.30	1.72	1.84	1.83	1.88

Key:
(1) 1959
(2) 1960
(3) 1961
(4) 1962
(5) 1963
(6) Light energy production rate (percent)
(7) Annual grain yields per mu (jin)
(8) Multiple cropping indices (times/year)

Between 1964 and 1974, the trend of change was similar for all three. Between 1974 and 1978, multiple cropping indices lay in a state of saturation while both the light energy production rate and annual per mu yields of grain rose and fell suddenly, even appearing to move directly contradictory to the multiple cropping indices. These changes demonstrated the following two points: First, increases in the multiple cropping indices must be interrelated to widespread use of superior varieties and to improvements in farming techniques in order to have striking results in increased output. During 1963 and 1964, late geng variety, Nongken 58, came into general cultivation in the suburbs, making for quite great growth in per

unit yields of single crop late rice. In 1963, yields were 657 jin per mu, a 12.1 percent increase over 1962. In 1964, growth was another 12.5 percent over 1963. From 1964 to 1974, the suburbs developed the three crop system of wheat-rice-rice, with the summer crop gradually becoming wheat for the most part, and with low yield varieties such as "Sanyuehuang" giving way to superior varieties such as "Zaoshu No 3." Low yield geng rice varieties such as awned coarse geng and awnless coarse geng gave way to high yield xian rice varieties such as Zhongganzao, Yuanfengzao, and Guangluai No 4. Late crop rices changed from varieties such as Laolaiqing, and Baimanduanzhong to high yield varieties such as Jianong, Shuangfeng, and Nonghu No 6. While this was going on, farming experience with the three crop system was gradually being accumulated among the masses, thereby causing output to rise with each passing year. Second, multiple cropping indices cannot continue to grow without limit. Once they reach a certain point, various contradictions such as the seasons, the labor force, fertilizer supply, soil fertility, costs and income increasingly intensify. Under these circumstances, if the multiple cropping indices are excessively high, by contrast, the light energy production rate will be made low, leading to a decline in output. In the three crop system of wheat-rice-rice, the seasons are tightly linked. When multiple cropping indices are excessively high, a contradiction occurs in rush transplanting of the late rice crop, and it is prominent in places where there is a large area of land but a shortage of labor. According to statistics, when late season rice, "Jianong 15," is transplanted between 31 July and 12 August, the yields per mu present a striking linear negative relationship to the period of transplanting ($y = 956.35 - 26.97X$ $r = -0.867$, $n = 13$, y being output (jin per mu), and X being the number of days). The later the transplanting, the lower the output. For each day of delay in transplanting, a reduction in yield of about 27 jin occurs. In Songjiang, Jinshan, and Qingfu counties, where there is a lot of land but a scarcity of labor, transplanting of the late rice crops should usually be completed by mid-August. When a minority of production teams delay as long as the 20th of the month, output was very low or the crop might be entirely lost with the light energy production rate amounting to zero. This demonstrates that reasonable restraint on multiple cropping indices, depending on the characteristics of an area, is extremely important in increasing the light energy production rate.

2. Effects of Temperature Changes on Growth of Rice and Wheat

Only under suitable temperature conditions can crops carry on their physiological functions normally. Temperatures that are too low or too high will hamper the progress of growth or damage the reproductive organs so that the light energy production rate will decline, leading to a decline in output. On the basis of the existing farming system, the effects of temperature on the physiological activities of crops are as follows:

(1) Effects of Temperature on the Raising of Early Rice Seedlings

In the suburbs, average daily temperatures are 15.4°C (1873-1972). In the course of a year, the number of days in which temperatures slid for 5 days to less than 11°C totaled 228 ± 7 (Table 2), and the number of days when temperatures were higher than 15°C averaged 185, which was favorable for the growth of rice.

Table 2. Number of Days When Daily Average Temperatures Slipped for 5 Days to Less Than 11°C in the Shanghai Area (1959-1978)*

Year	Beginning Date Month/Day	Ending Date Month/Day	Number of Days	Standard Deviation
1959	3/20	11/19	245	
60	4/4	11/24	235	
61	3/29	11/20	237	
62	4/6	11/20	229	
63	3/30	11/24	240	
64	3/28	11/9	227	
65	4/13	11/24	226	
66	4/6	11/13	222	
67	4/2	11/11	224	
68	3/29	11/8	225	
69	4/7	11/15	223	
70	4/6	11/21	230	
71	4/5	11/15	225	
72	4/11	11/16	220	
73	3/23	11/9	230	
74	3/20	11/12	227	
75	4/4	11/19	230	
76	4/11	11/10	214	
77	4/2	11/14	227	
78	4/5	11/17	223	
Totals			228.1	± 7.2

*According to data prepared by the meterology office of our institute
Using nonrecurring average temperature slippages for 5 days to less than 11°C as a starting point, and by using the beginning of the recurrence of temperature slippage for 5 days to greater than 11°C as an ending point, the beginning and ending points for a specific day were less than 11°C.

But temperature changes are fairly great from one year to another. In the 100 year period 1973 to 1972, there were a total of 11 instances in which late April temperatures reached a low of 6°C, and 54 instances in which they reached a low of 8°C, with the low temperatures posing quite a threat to early xian rice seedlings, which have a weak tolerance for cold. Early xian rice is very temperature sensitive, and if temperatures are excessively high during the period of seedling growth, it becomes prone to "excessive seedling age" in which the panicles are very small and output very low. Days with continuous average temperatures above 20°C after 16 May 1974 numbered only 17 to 20, and this was higher than the average 19.3°C of normal years (1966-1975). During the latter part of the month, they rose to a high of 23.2°C for a combined high of 42.5°C. As a result the early rice of some communes and brigades developed "excessive seedling age"; the light energy production rate declined; and early rice throughout the entire region averaged yields of 706 jin, a decline by 83 jin from 1973.

(2) Threat of High Temperatures for Blossoming and Coming Into the Milk of Early Rice

In the three crop system, the period in which early rice reaches full head and ripening occurs in the Shanghai area during the high temperatures at the height of summer. Experimentation has shown that with high temperatures in excess of 35°C during the heading period, serious damage results to the functioning of stamens, and the pollen does not mature well, with the result that normal pollination is not possible and husks empty of grain result. High temperatures during the period of coming into milk retard transfer to grains in the panicles of the products of photosynthesis to the impairment of full development of the grains. High temperatures during the late stages of development result in forced ripening, which may bring about a decline in the light energy production rate. In addition, because of the high daytime and nighttime temperatures with little variation between the two, not only is a lot of husk produced and the rate of rice production lowered, but the grains of rice are mealy and not very tasty. During the 1970's, high temperatures occurred 3 times in the suburbs (in 1971, 1977 and 1978), causing varying degrees of reduced output. In 1971, early rice yields were 657 jin per mu; and in 1977, yields were 670 jin per mu for declines in output from 1973 of 132 jin and 115 jin respectively. In 1978, yields were 742 jin per mu, for a decline in output of 47 jin. According to meteorological data for the period 1873-1972, there were a total of 42 years in which high temperatures for 3 days in a row during the period 1 to 20 July were greater than 35°C, or about 4 times every 10 years. It can be seen that high temperature damage to early rice is a major problem for production in suburban areas.

(3) The Effects of Temperature on Late Rice

Output of late crop rice is inconsistent with great changes occurring from year to year. The difference in output between years of highest output and years of lowest output has been more than 200 jin. There are numerous reasons for the inconsistency in output. First of all, in mid-September, climatic temperatures decline in suburban areas of Shanghai with lows of 17°C being frequent. When late crop rice encounters damage from temperatures as low as 17°C during the meiosis stage (from 10 to 12 days before full heading), the pollen aborts and the pollination rate declines. Temperatures averaging as low as 20°C may very likely occur after 20 September, and then the late rice crop cannot blossom or set fruit normally. Both these situations easily result in an increase in the number of empty husks, a low grain weight per thousand, and a decline in the light energy production rate. Usually the late rice crop in the suburbs reaches full head before 25 September, and consequently temperature lows during the meiosis period prior to 14 September have quite an effect on output. In the 100 years between 1873 and 1972, such temperature lows occurred 26 times and average daily temperatures as low as 20°C for 3 consecutive days prior to 25 September occurred 24 times during this period. Such temperature lows occurred twice on 8 occasions, which is to say that in the course of 100 years, there were a total of 42 years in which damage from low temperatures occurred, or about 4 times every 10 years. During the 1970's, there were a total of 5 years in which the late rice crop encountered such low temperature damage (1972, 1974, 1976, 1977 and 1979), with output being lowest in 1972 when per mu yields were 525 jin or 200 jin less than for 1973 and 1978. During 1974, 1976 and 1977,

annual yields per mu were 605, 611, and 597 jin respectively, for a loss of more than 100 jin. (On 19 and 20 September 1971, the low temperature was 16°C and the average daily temperature was 19°C. On 19 and 30 September, during the full heading of the late rice crop, an "upward turning of panicles" occurred, and output was extremely low. Average per unit yields from the late rice crop that year were 512 jin, so in the course of the 1970's, low temperatures damaged the late rice crop a total of 6 times.) Second, general light sensitivity is very strong for the late rice crop grown in the suburbs, with you panicles beginning to differentiate around 20 August. Therefore, the period of field vegetative growth for late crop rice that has been transplanted early is quite lengthy, and output is fairly high. Rice that has been transplanted late has a rather short vegetative growth period in the fields, and output is, consequently, fairly low. Inasmuch as climatic changes differ from year to year, with the ripening of wheat, barley, naked barley, and early rice taking place late in some years (such as 1975), the transplanting of late crop rice is correspondingly delayed. Then, even though temperatures may be just right during the period of growth of the late rice crop and a lot of sunlight available, output will still be low, with per mu yields of only 590 jin. In the case of some communes and brigades where the burdens on the soil and on manpower are excessive, there will always be some "foot dragging fields" where, as a result of late transplanting of rice seedlings, the danger of damage from low temperatures is quite serious with frequent occurrences of "turned up panicle heads" and greater losses.

Additionally, in the three crop system in use in the suburbs, spring wheat, Zaoshu No 3, is used as a summer crop, and this variety is prone to cold damage with reduced output if low temperatures occur during late winter or early spring. During the last 10 days of January and the first 10 days of February 1977, low temperatures prevailed for 11 consecutive days with the lowest being -11.2°C, which killed many seedlings and resulted in per mu yields of only 200 jin, and a light energy production rate of 0.132 percent, which was less than half of the 0.283 percent of 1976 and the 0.303 percent of 1978.

3. Rational Readjustment in the Pattern of Crop Rotation and Fullest Use of Light and Temperature Resources

Beginning in January, a gradual increase occurs in the sun's radiation in the Shanghai suburbs. This increase reaches a zenith between July and August and rapidly declines after September to a nadir in December (Figure 3). The link period for two crops of rice in the wheat-rice-rice three crop system is usually during the first 10 days of August just at the time of the maximum amount of radiated energy. According to meteorological bureau data, total radiation during August averages 450.5 calories (1958-1972) per square centimeter per day. For a 15-day period, this totals 40.05 million kilocalories per mu, or the equivalent of the amount of energy stored in 9,536 kilograms of biomass. During this period of time, the early crop of rice is being harvested in the three crop system, and the late rice crop is being transplanted with greening up and the onset of tillering taking place. In places where the labor supply is short, where harvesting and planting may not get done on time, the number of green leaves in the fields will not be numerous and the light energy intercepted and captured will not be great, so much will be wasted. In a two crop system of rice and wheat, the waste

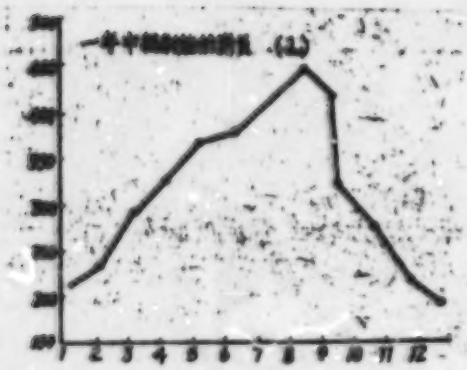

Figure 3. Annual fluctuations in radiation energy (1958-1972 average, based on data from the Shanghai Municipal Meteorology Bureau). Units: Calories/Cm^2 per day.

Key: (1) Annual fluctuation in radiation energy

of light energy is also considerable during the period when wheat is being harvested and rice is being planted. In terms of temperature, the Shanghai suburbs offers a lot of latitude for the growing of two crops, but a three crop system is pushing it. In places where the supply of labor and fertilizer is abundant, three crops may be planted, but where they are not abundant, it is best not to. In terms of the popularization of superior varieties, during the past 10 years there has been a continuous replacement of old varieties with new high yield varieties suited to the three crop system. Fairly great increases in the light energy production rate have taken place for wheat, barley, naked barley, early rice, and late rice. Between 1974 and 1978, these rates were 0.229, 0.786 and 0.624 respectively. In comparison with average values for the period 1959-1963, this represented a 80.0 percent increase for wheat, barley, and naked barley, a 49.7 percent increase for early rice, and a 86.4 percent increase for late rice. The light energy production rate for single crops of late rice during the period 1974-1978, however, was only 0.529, an increase of only 32.9 percent over the period 1959 to 1963 (Table 3). It has been precisely the popularization and constant replacement with superior varieties that has created the conditions for the harvest of high output from the three crop system.

In nearby suburban areas where land is scant and people numerous, the labor force can be centralized during the harvest and planting seasons to keep apace of the season and reduce the waste of light energy. By matching varieties with each other and regulating the sowing seasons, it is possible to avoid, for the most part, impairment to most fields caused by high and low temperatures, and irrigation may also be used to lower temperatures or raise temperatures to diminish their damage. Therefore, in terms of the overall area, the three crop system should be the dominant one, but not proportionally excessive. The multiple cropping index should be kept within proper bounds in order to assure harvest of high output.

Table 3. Changes in Light Energy Production Rates for Suburban Grain Crops (percent)

Year	Wheat, Barley, and Naked Barley	Early Rice	Late Rice	Single Crop Late Rice
59-63	0.125	0.525	0.338	0.398
64-68	0.157	0.553	0.464	0.436
69-73	0.181	0.692	0.550	0.487
74-78	0.229	0.786	0.624	0.529

Experience during 1978 in places with ample land and scarce manpower where conflicts were sharp in the uses of seasons and of manpower, showed that suitable reduction in the multiple cropping indices, a retrenchment from some triple cropping, and an expansion of some double cropping, brought outstanding results in increased yields. In 1977, the Zhuanqiao Commune in Songjiang County farmed a total of 22,800 mu of grain with a multiple cropping index of 2.28 and with annual grain yields of 1,084.1 jin per mu. In 1978, they farmed a total of 22,151 mu of grain with a multiple cropping index of 2.14 and with annual grain yields of 1,471.5 jin per mu for a 35.7 percent increase. Owing to readjustments in crop rotation, the multiple cropping index dropped by 0.14 as 8,466 mu less of early rice and late crop rice were farmed and 3,571 mu more of late crop rice was formed, thereby staggering farm work and redistributing manpower to make possible a 3 to 6 day advance in the growing of each crop and an improvement in light energy utilization by each crop. In 1978, the early rice crop yielded 688.0 jin per mu for a 12.9 percent increase over 1977. The late rice crop yielded 683.3 jin, a 47.0 percent increase over 1977. In 1978, a total of more than 20,000 mu of rice and wheat were grown in an expansion of double cropping with commensurate reduction in the area of triple cropping. Not only did the single season rice crop throughout the county pioneer per mu yields exceeding 1,000 jin for a 31 percent increase over 1977, but additionally, as a result of the redistribution of manpower and close attention to the seasons for harvesting and planting, the utilization of light and temperature resources was increased with improved annual grain output resulting. In 1978, the suburban multiple cropping index averaged 2.47, a 0.04 reduction from 1977. Reportedly, this also played a role in the redistribution of manpower and in the promotion of large-scale increases in output. From this may be seen that in places with an excessive shortage of manpower, a readjustment to the pattern of crop rotation that serves to reduce the area of triple cropping is helpful in moderating conflicts in the crop seasons and for manpower, and assures continued high and consistent output from grain crops. As for honoring the custom of the masses in the county of growing corn, through appropriate expansion in the three crop system of "wheat-corn-rice," both the light energy utilization may be increased and a synthesis of land use and land nurture can be achieved. In order to meet the needs of the suburbs of large cities for the development of animal fodder, close-in suburbs can also plant some "wheat-corn-rice." Additionally, the counties of Feng, Nan, and Chuan, which are areas of "green manure-two crops of rice," developed its fertilizer resources and went on to give close attention to crop seasons so as to reduce the risk of low temperatures for the late rice crop. Their appropriate expansions in the cultivation of "green manure-two

crops of rice" is also workable. In short, from the angle of fullest use of light and temperature resources, adaptation of methods to local situations for suitable readjustments in current suburban farming systems is mandatory if there are to be further increases in per unit grain yields, and increases in the labor productivity rate and the incomes of commune members. Of course, looked at in terms of long-range objectives, realization of the modernization of agriculture in the suburbs will also increase crop output greatly. The scientific and technical problems entailed are very great, and utilization of light and temperature resources is but a very small subject among them. How can there be full utilization of light and temperature resources? This requires consideration not only of sensible readjustments to the farming system but also requires efforts in breeding and vigorous development of paddy rice varieties that are tolerant of high temperatures, resistant to low temperatures, early ripening, and that have a light energy utilization rate of 3.8 percent. Theoretically, given the light energy in the Shanghai area between 25 May and 4 November, it should be possible to harvest yields of 3,741 jin of rice. The potential for increased yields is great. If only we will launch further study in this quarter and continuously increase the utilization efficiency of light and temperature resources, realization of suburban grain yields of 2,000 jin per mu is entirely possible.

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CSO: 4007

PERFORMANCE OF NEW RICE VARIETY REPORTED

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 80 p 37

[Article by Mo Chengyu [5459 3397 5148], Jinshan County Seed Company, "Strain of Early Xian Rice, 'Guangxiaozao'"]

[Text] "Guangxiaozao" is a new strain of rice bred at the Songyin Commune Seed Farm in Jinshan County by crossing "Guangluai No 4" with the early xian rice, "Xiao." It has been part of comparative tests of varieties within the county since 1976. During 1978 and 1979 it was part of variety testing in cities in various regions with yields usually amounting to around 780 jin, somewhat more than for early ripening early crop xians, Erjiuaing and Ainanzao No 1. (see table) In 1979 Jinshan County planted 17,200 mu of this hybrid for 746 jin per mu yields, an 8.1 percent increase in output over Erjiulu No 1.

I Growth Characteristics

When cultivated as part of the 3 crop system, the total growth period for Guangxiaozao is about 93 days and it requires 2100 to 2200 degrees of accumulated varying temperatures. It ripens from 2 to 3 days earlier than either Erjiulu No 1 or Ainanzao No 1. It is a specially early ripening early xian. Plant heights are 60 centimeters; plant shapes are bushy; and growth is even. Leaves on the main stem total 10.5 in number. Leaf color is dark green, and leaves are short and straight. Boot leaves are 22.5 centimeters long and 1.51 centimeters wide. The flag leaves grow from the stem at an 18 degree angle and the neck of the panicle is 2.8 centimeters long. Tillering strength is moderate; panicle formation rate is high; plants show both strong tolerance for fertilizer and resistance to lodging. They are subject to light sheath and culm blight. Shapes of panicles are medium; panicles are 15.3 centimeters long; each panicle has 57 grains; seed setting rate is rather high; husks devoid of grain amount to about 17 percent; and the weight of 1000 grains is around 24 grams. Glumes are deep yellow in color, and tips of apicules are yellow and without awns. Grains are short and ovular in shape the chucao [0427 4751] rate is 75.6 percent. Both the fubai [5215 4101] and the xinbai [1800 4101] of grains are large. Grain quality is somewhat poor, and plants are prone to shattering. Plants are strongly temperature sensitive, and there is little give in seedling age. Needs for fertilizer and water are high, and when fertilizer is lacking during the late stage, plants are prone to premature degeneration.

Principal Economic Characteristics of "Guangxiaozao"

(1) 项目	年份	(2) 全生育期(天)	(3) 株高(厘米)	(4) 总粒数	(5) 空壳率(%)	(6) 千粒重(克)	(7) 有效穗(万/亩)	(8) 产量(斤/亩)
(10) 金山县品比	76	96	64.5	64.9	13.5	26.1	35.4	886
	77	92.2	62.5	64.4	16.7	23.8	37.9	779
	78	96	67.2	68.1	18.7	23.0	33.4	786
	79	96	67.3	65.3	20.4	28.4	38.5	879
(11) 市品比	78	90	60.2	49.6	20.8	22.6	41.7	884
	79	97.1	64.0	65.5	14.4	23.4	43.5	774
(12) 平均		93.6	62.6	67.2	17.1	23.7	38.4	781

Note: Based on compilation of data from municipal and county comparisons. Varieties with which comparisons were made were Erjiuqing and Ainanzao No 1. Average per mu yields 773.3 jin. Total growth period 96.1 days.

Key:

(1) Item
(2) Year
(3) Total growth period (days)
(4) Plant height (cms)
(5) Total number of grains
(6) Empty husk rate (percent)
(7) Per thousand weight of grains (grams)
(8) Effective panicles (10,000 per mu)
(9) Yield (jin per mu)
(10) Jinshan County variety comparisons
(11) Municipal variety comparisons
(12) Average

II Essentials of Cultivation

1. Soil Preparation: The earlier the better. Sowing of seeds between 20 and 24 April for a seedling age of no more than 28 days. Quantity of seeds per mu of seedling fields should be from 170 - 200 jin. Since seeds absorb water fairly slowly, seeds should be soaked a day longer than other varieties.

2. Transplanting Density: There should be 60,000 holes per mu, and from 300,000 to 350,000 basic seedlings. Within 15 days after planting the main stem tillers should amount to about 500,000. There should be between 550,000 and 600,000 at the peak for about 400,000 effective panicles.

3. Basic Fertility of Fields: Each mu should have a dressing of from 25 to 30 dan of pig dung or from 60 to 80 dan of grass-mud rotted manure. From 80 to 100 jin of ammonia water should be applied to the surface. Fertilizer should be applied twice: Between 30 and 35 jin of ammonium sulfate from 2 to 3 days following transplanting. After another interval of 5 to 6 days, another application of ammonium sulfate to promote early development and constant growth. If "Sitting autumn"* occurs when this variety is used as a late rice crop, output will not be as low as from Guangluai No 4.

*[Refers to a transplanting phenomenon where the transplanted seedlings do not grow new leaves or roots while old ones wither. The plant either dies or its growth is retarded 20-40 days.]

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CSO: 4007

BRIEFS

AGRICULTURAL RESPONSIBILITY--The propaganda department of Shanghai Municipal Party Committee on the morning of 25 October called a report meeting on various documents adopted by the party Central Committee to strengthen and improve the system of fixed responsibility in agricultural production. Some 10,000 propaganda cadres from party organizations on various fronts heard the reports. (Wang Jingliang), deputy secretary of the leading party group of the Municipal Agriculture Committee, pointed out in his report that the establishment of the system of responsibility in production will further implement the two documents on agricultural development adopted by the party Central Committee, and also play an effective role in perfecting the scientific management of our socialist collective economy. Touching on the question of fixing output quota on a household basis, he pointed out that this is a provisional and flexible measure taken by the party to help some localities with extreme difficulties. [Shanghai City Service in Mandarin 1130 GMT 25 Oct 80 OW]

CHICKEN MANURE AS FEED--Chicken droppings are now being used to feed hogs in 240 livestock farms run by 30 communes in Shanghai suburbs. By mixing it with other types of hog feed, its use can reduce grain consumption by 30 percent. [Beijing RENMIN RIBAO in Chinese 6 Oct 80 p 2]

CSO: 4007

JOINT AGRICULTURE-COMMERCE ENTERPRISE SYSTEM WORKS WELL

Chengdu SICHUAN RIBAO in Chinese 29 Aug 80 p 2

[Article by Shen Gongduo [3163 0180 1122]: Promote Production, Expand Flow of Goods, Increase Income of the Production Team and Commune Members"]

[Text] Since March of this year, the various localities in our province have followed the spirit of the directives of the Provincial CCP Committee. Forty-two areas (communes) in 13 counties have launched testing points for joint management of agricultural sideline products by the supply and marketing cooperatives and production teams. Several months of practice have shown that the joint operation of agriculture and commerce is the correct path. It benefits the promotion of the development of agricultural sideline production, steps up the flow of materials between towns and villages, and increases the income of production teams and farmers.

The fundamental method of joint operations for agricultural sideline products launched by various localities is to rely on a voluntary basis and to do away with the limitations of administrative zones. Supply and marketing cooperatives and production teams negotiate with each other and sign joint agreements. The supply and marketing cooperatives' purchasing stations serve as bases. A joint operations management department is established, and independent accounting is set up to take the responsibility for losses or profits. Representatives of the units participating in the joint operations organize a management committee and practice democratic management. After 20 percent of the profits realized by the joint enterprises are sent in as income tax, 50 percent are returned to the production teams and distributed to participating commune members. Ten percent are given to the local commune for development and for organizing diversification, and 40 percent are given to the supply and marketing cooperatives. This new economic measure has received the support of the broad masses of cadres and commune members. Over 90 percent of the production teams in many counties and regions and some state-run farms and orchards have actively participated in the joint operations.

The test localities for launching joint agricultural and commercial operations have not been in existence for very long. But because of the attention paid to them by the party committees at all levels, the direction is correct, policies and measures suit the actual situation, and their superiority has already been demonstrated. The economic results are obvious. First, the joint ventures have promoted the development of production of agricultural sideline products and expanded the flow of commercial products. According to statistics compiled by the 40 joint operation management departments the monetary amount of agricultural sideline products contracted

with the production teams after joint operations is 30,250,000 yuan, an increase of 11 million yuan, or 57 percent, over that before joint operations. In some areas and communes, this amount has increased by multiples. Second, it has stimulated the enterprises to improve management of operations and has expanded the results of operations. It is estimated that joint agricultural and commercial enterprises operating on a trial basis can realize an increase of 53 percent in profits this year over the actual profits made last year. The Xinghuo area of Yingshan, the Sanyuan area of Fengdu, the Zuyuan area of Jingyan, and the six areas of Hechuan County will double their profits. Third, it increases the income of the production teams. According to estimates made by the 16,146 production teams participating in joint operations, the net income of each team from returned profits and additional sales of products to the purchasing authorities averaged 500 yuan after joint operations. Teams that sold more products to the purchasing authorities received several thousand yuan. Although the state tax rate has been lowered, the amount of tax dollars has increased. It is estimated that this year, a total of 1.2 million yuan can be submitted to the state as income tax, products tax, and industrial and commercial taxes--an increase of 19 percent from the actual amount last year.

The reasons why joint agricultural and commercial operations can achieve such good economic results are mainly the following:

1. Joint operations have linked production and the flow of goods very close together, opened up production and sales channels, and avoided the phenomenon of a break in production and sales. The supply and marketing cooperatives must actively guide the commune brigades to develop production and must exert a lot of effort to help sell agricultural sideline products. In particular, the market for the three categories of agricultural sideline products has been opened up, and future worries of the production teams have been eliminated. The Tashui area of Anxian produced over 1 million jin of ginger this year. This is the type shaped like chicken feet and can only be sold fresh. The production team worried that the ginger could not be entirely sold. The joint operations management department used written communications and made connections everywhere and was able to sell all of the ginger. The masses were satisfied. The joint operations management department of the Yangma Commune of Chongqing County organized two teams to grasp the development of production and the sale of products. Through various channels, over 16,500 pieces of rattan products were sold and over 18,000 jin of wine were sold at negotiated prices for the commune brigade enterprises. By the end of July, 81.7 percent of the annual plan for purchase of agricultural sideline products by the entire commune had been completed--an increase of 20 percent over last year. Many joint operating units have begun to sell fresh produce such as poultry eggs, fresh fish, eels, dogs, and snakes according to the demands of the masses. They have increased the income of the production teams.

2. The relationship between agriculture and commerce has become intimate. In the 1950's, the relationship between agriculture and commerce was very congenial. It was a mutually dependent relationship. Later, due to the influence of the extreme leftist line and problems in work, the relationship between the two became strained and they did not coordinate well. After this attempt to establish test localities for joint agricultural and commercial operations, the benefits of producers and entrepreneurs have been united. A situation in which agriculture and commerce mutually support each other and mutually care about each other has emerged. The cadres of communes and brigades and the masses say: Now, joint operation means "agriculture and commerce working together. Their relationship has greatly improved. There are no more worries that products will not be sold, production has no more after-worries,

the money earned is divided in half, and everyone is happy." They care a lot about the business results of the enterprises. Staff members and workers of the supply and marketing cooperatives also actively help the production teams open up new markets for production and exert efforts to sell the products.

3. Reform of the commerce of farm villages has been advanced. In the past, supply and marketing cooperatives exerted too much centralization and strict management over agricultural sideline products. The basic-level communes were in a passive state, and in management everyone "ate from the big pot." After joint operations, the management department implemented independent accounting and took up the responsibility for profits and losses itself, did away with the limitations of administrative zones, and organized the flow of commercial products according to the direction of flow of economic activities, reduced unnecessary circulation, and saved on circulation costs. After the Xinghuo area of Yingshan County participated in joint operations, products were sold to the purchasing authorities and transferred according to the direction of flow of the economy. The cost saved from just the single product bluish dogbane alone was equivalent to 15 percent of the total amount of last year's profits. Because the joint enterprises "shoulder two tasks" and because they develop cross-sectional channels, the form of operation is versatile, the scope of business is expanded, they actively serve local production and life, and they are praised by the broad ranks of commune members and the masses. The joint operations management department of the Linjiang area of Ziyang County dispatched people to buy back over 380,000 jin of oil dregs from Qingchuan County to support the development of production and went to Qinghai Province to buy back over 620,000 jin of goat manure. The production teams competed to buy them. They signed a contract with Wenjiang area for trumpet creeper vines and vines of peanut plants totaling 340,000 jin. These increased the income of the commune brigades. The joint operations management department of the Singhuo area of Yingshan County took the interest of the masses into consideration, went directly to the Dazu pottery plant and Quxian, bought some pottery products, and sent them to branch communes for sale. Because circulation was reduced, retail prices dropped 13 percent.

At present, joint agricultural and commercial operations are still in the trial stage. Based on the summary of the experiences of the first stage by the various localities, efforts are being exerted to expand the scope of business and the autonomy of the joint enterprises in order to further grasp production well as well as to enliven exchange and strengthen construction of the joint enterprises so as to obtain greater economic results.

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CSO: 4007

BRIEFS

AGRICULTURAL FIGURES FOR 1979-- Since 1976 agricultural production in Sichuan has achieved remarkable results. When comparing 1979 with 1976, the total grain output increased 28.8 percent (14.3 billion jin); cotton increased 31.7 percent; edible oil increased 83.3 percent; sugar nearly doubled; silk cocoons, tea leaves and fruit increased 50-100 percent; and live hogs increased nearly 43 percent. The increase in grain output during the past few years has allowed an increase in the grain rations of the commune members. The average per capita grain ration in 1979 for peasants increased 153 jin compared to 1976. In 1976 the income from sideline occupations for commune households for the whole province was 2.4 billion yuan; this increased to 3.4 billion yuan in 1979, accounting for about one-half of the collective distributed income. In 1979 the average amount of fertilizer applied per mu of arable land was 90 jin, more than doubling that applied in 1976. At present the irrigated area in the province accounts for 45 percent of the total amount of arable land. [Hong Kong ZHONGGUO XINWEN in Chinese 8 Oct 80 p 3]

CSO: 4007

BRIEFS

WHEAT SOWING--Urumqi, 24 Oct (XINHUA)--As of mid-October Xinjiang Uygur autonomous region had sown some 8 million mu of winter wheat, or 78 percent of the plan. Aksu and Shihezi prefectures and Bortala Mongol autonomous prefecture had already overfulfilled their respective sowing plans. The state-operated farms in the region had sown a total of more than 2 million mu of winter wheat. [Beijing Xinhua Domestic Service in Chinese 1209 GMT 24 Oct 80 OW]

FINE WOOL--Urumqi, 26 Oct (XINHUA)--Xinjiang Uygur autonomous region increased its fine wool output to more than 22,000 tons this year, accounting for about one-third of the national total. The region is one of China's leading fine-wool producers. It now has 2.38 million head of improved fine-wool sheep, 2.06 million more than in 1972. Over 20 provinces, municipalities and autonomous regions are raising the Xinjiang fine-wool sheep, a breed which won an award at the 1978 National Science Conference. [Text] [Beijing XINHUA in English 0715 GMT 26 Oct 80 OW]

HYDROGEOLOGICAL SURVEY--A certain unit of the PLA capital construction engineering corps stationed in Xinjiang has completed a hydrogeological survey of the 15,000 square kilometer area in southern part of Tarim Basin. The unit started the survey in 1979 to locate underground water. With the active support of the local government and people, the unit has basically grasped the pattern of underground water distribution in the area and discovered abundant underground water existing at the northern foot of Kunlun mountain which can be exploited to irrigate farm land or for use as drinking water. The completion of this survey will contribute to the development of southern Xinjiang. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 29 Oct 80 OW]

AIRCRAFT USE IN FARMING--A farm run by the 29th Regiment of the PLA in Bayingolin Monggol Autonomous Zhou of Xinjiang reaped a bumper harvest from its more than 12,000 mu of rice crop sown by aircraft this year. Currently, part of the farm's field work, such as fertilizer application, chemical weeding and spraying of pesticides, is also done by aircraft. [Beijing RENMIN RIBAO in Chinese 16 Oct 80 p 1]

CSO: 4007

BRIEFS

LIVESTOCK BREEDING--There are nearly 400 million mu of pastureland and 7.7 million head of cattle and sheep in Nanqu Prefecture, Xizang. A recently held meeting in Nanqu Prefecture called for still greater efforts to raise livestock and increase animal products side by side so as to improve the living standards of local people. [Lhasa Xizang Regional Service in Mandarin 1100 GMT 19 Oct 80 OW]

CSO: 4007

BRIEFS

BROAD BEAN PRODUCTION--Broad beans are an important grain crop in Yunnan. Normally, an area of approximately 3 million mu is planted with a total of 500-600 million jin per year. This accounts for 25 to 30 percent of the total output of small spring grains. It is planted after the rice crops as well as the corn and cotton crops. [Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 5, 25 Sep 80 p 27]

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ABSTRACTS

AGRICULTURAL MACHINERY

NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY], 23 Sep 80..... 53

1. GENERAL INFORMATION

INCREASING OUTPUT OF AUTUMN GRAIN URGED

Beijing NONGCUN GONGZU TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 5, 5 May 80 p 2

[Article: "Use Every Manner of Means To Increase Autumn Grain Output"]

[Text] The crops to be harvested in the summer are not growing as well this year as they did last because of the protracted onslaught ever since last fall of drought, waterlogging, and freezing. In view of this state of affairs, in addition to efforts to give good care to the summer grain during its later stages of growth as well as to careful reaping and threshing to obtain increased summer grain output, vigorous efforts should be made with the autumn grain output employing every manner of means to increase the autumn grain output so that a bumper harvest in grain output for the year as a whole will be realized.

It must be realized, however, that a constant rise has occurred in the summer grain output during the past several years, and that development has been rapid, while growth of autumn grain output has been sluggish or hesitant in its forward advance. The proportion of grain derived from the summer harvest has risen from 14 percent during the period right after Liberation to 21 percent, while the proportion from the autumn harvest has declined from 77 percent to 62 percent.

Many reasons account for the slowness in the growth of autumn grain production, including both disastrous weather factors and problems of a work related nature. One major reason is that quite a few places have not given sufficient attention to autumn grain output; they reduced the area planted to autumn grain year after year, and some continually diminished the planting of intermediate rice and autumn-harvested crops that have always produced consistent and high output. In the use of fertilizer, they emphasized summer applications only to skimp in autumn so that the amount of fertilizer for growth of autumn grain was seriously inadequate. Some relaxed care, planted late, had plants that were not sturdy, and allowed serious weed problems.

Leadership at every echelon has to increase its perception and give serious attention to autumn grain output. Autumn grain is the most important part of China's grain output. The area sown and the output amounts to about two-thirds that of the entire country's grain output. Whether the autumn grain output is bumper or slim determines the overall situation in grain output for the entire year. It is not a matter of little importance, but a matter of decisive importance. Without a rise in autumn grain output, there can be no rapid increase in the growth of

overall grain output. The national economy and the people's livelihood must consequently be inevitably impaired, the speed of the development of all of agriculture affected, and four modernization construction impaired, which are matters not to be treated lightly. A look at the situation over the last several years shows that it has been because of year after year increases in grain output that popular sentiment has been tranquil, every industry has flourished, and market conditions have become increasingly better, and the development of all agriculture has been promoted.

In order to increase autumn grain output, there has to be diligent implementation of the party's policies. The bumper harvests in agriculture of the past two years are attributable to implementation of the two Central Committee documents on agriculture, and implementation of the principle of to each according to his work, which have aroused the enthusiasm of cadres and the masses. In management, continued stress must continue to be layed on all forms of production responsibility systems. Cadres should penetrate into the grassroots levels, propagandize government policies, educate the masses, change backward production outlook, and effectively solve problems existing in autumn harvest output.

Cadres and the masses alike must be taught to firmly implant a mentality of year round combat against calamities to gain bumper harvests. The early season of autumn grain growth is one of high temperatures, while early frost may occur during the late season. Calamities happen often, and droughts, waterlogging and early frost, in particular, may take place every year. Disasters resulting from wind, hailstones, insects and disease also continually happen. The slightest bit of inattention to such calamities can impair high and consistent output of autumn grain, so one can never lower his guard. Harvesting of a bumper crop of autumn grain must be rooted in combat against calamities and based upon combat against great calamities, combat against numerous calamities, combat against calamities when they occur, and guarding against calamities when they do not occur to achieve preparedness that averts peril. Reliance must be placed on the masses for combat against calamity and the reaping of bumper harvests, and there must be understanding and mastery of natural laws, with unceasing summary of experiences in combating calamities, the adoption of measures adapted to local conditions, and efforts to make the most of advantages while avoiding disadvantages. In this way losses from calamities can be reduced to the minimum so that either no reduction in output occurs, or bumper harvests are reaped in years of calamity.

Agriculture is an integrated whole and so we must deal with the total situation to set up year round preparations, plan as a whole, properly handle the early part of the season and the late part of the season, and understand the relationship between coarse food grains [e.g. corn, sorghum, and millet] and fine food grains [e.g. wheat and rice], and between staple food grains and other food grains. In providing the means of production needed in agriculture, we should look both ahead and behind, make rational distribution, and think about the autumn season even while giving attention to the summer season. Such overall consideration and mutual promotion will accelerate the development of agriculture.

We are determined to diligently adhere to the spirit of the Third Plenary Session of the 11th Party Central Committee and the Fifth National People's Congress to do a good job in all aspects, to master every production link without missing any opportunities and to strive for a greatly increased output of autumn grain in order to promote the faster development of all agriculture, and to make a new contribution to four modernization construction!

9762
CSO: 4007

DIFFICULTY IN SELLING HOGS PROTESTED

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 4, 5 Apr 80 p 34

[Article by Correspondent Jiang Shulian [3068 2885 1670]: "A Problem Urgently in Need of Solution"]

[Text] In 1979, Jiangsu Province's production, sales to the state, marketing, shipments to other provinces, and exports of live pigs were the highest in history. An estimated 16.6 million fattened hogs were shipped to market for a 5.9 million increase over the previous year. With the growth in production of live pigs came a great increase in organic pig fertilizer for agriculture. If the manure from a single head amounts to 50 dan, then the amount collected for a year from the feeding of 40 million head is sufficient to provide 30 dan of fine quality fertilizer to every mu of collectively farmed land. Jiangsu Province's year after year bumper harvests are closely related to its production of live pigs. In addition, peasant income has increased. During 1979, each household in the entire province sent an average of 1.4 hogs to market for an average net profit per household of about 100 yuan. Nevertheless, as a result of the greatly increased output of hogs, once prices rose, the masses' purchasing power was definitely limited, with the result that the amount of pork put into storage increased greatly over previous years. As of the end of last year, storage throughout the province increased 91 percent over the previous year, and everywhere a situation developed in which production was greater than state procurement, and state procurement was greater than sales. Beginning in November and December last year, the procurement departments in many places instituted a system of hog sales only by coupon to control matters through limited procurement. If Nie County had 210,000 fat hogs for sale before the lunar new year and the procurement departments ruled each production brigade could sell only two or three head by coupon daily, more than 4 months would be required to sell all the pigs, the pigs continuing to be fattened during this period not being included. The 14 production brigades in the Jianshe Commune in that county currently have 298 fat hogs weighing more than 180 jin each in pens, but the procurement departments will accept only two head each day. At this rate, it will take 5 months before the procurement department accepts all of them. Wujin County's fat hogs cannot be accepted for procurement within the county, so they are shipped to market in Changzhou, but procurement by the state is not possible in Changzhou either. Every day from 40 to 50 farm boats loaded with fat hogs are lined up waiting along the riverbanks, and after a wait of several days, some pigs sicken or die. The masses say, "To raise pigs is difficult but to sell them is sad." In Taixing County the line of people trying to sell pigs stretches

3 li, and in order to sell a pig, one has to find an acquaintance, use contacts, resort to backdoor deals, and invite people to dine or give them gifts. The masses say, "When pigs are short, the food departments come wheedling at your door, but when pigs are numerous, the food departments push you away. With the wheedling then and the pushing away now, pig farmers just can't win nohow."

When grown hogs cannot be sold and there is no room for young hogs, the price for shoats plunges from 1 yuan per jin to .60 or .70 yuan, and slaughtering of sows has begun in some places. Between 1 and 4 January this year, 49 sow skins were procured by the state at the Xishiqiao Commune in Jiangyin County. As of now, a considerable number of communes and production brigades have begun to restrict the raising of hogs. In addition, instances in which the state has refused to buy vegetables and sheep have occurred in Nantong, Huaiyin, and Yancheng prefectures.

The above state of affairs exists in Zhejiang Province and in Shanghai as well. Unless urgent measures are taken, a great decline will take place in this year's output of hogs and sheep.

Postscript. The situation reflected in Comrade Jiang Shulian's letter exists in varying degrees in other areas as well, where there has been a great deal of development in hog production. This is a weighty problem, which should arouse the serious attention of party and government leadership organizations and departments concerned everywhere.

Great growth occurred in hog output in China last year, and it is extremely heartening that the peasants increased their incomes and the people in cities and villages had an increased supply of pork. Still, one positively cannot suppose that leadership can be relaxed when a lot of pigs have been raised. Last year's supply of pork nationwide averaged increases of no more than 3 jin or so, so the level of pork consumption remained very low. At the same time, the large amount of pigs, fertilizer, and grain available played a major role in promoting the development of agricultural production and in increasing the peasants' income. Therefore, strengthening of leadership is still required together with a deep understanding of the situation in order to solve new problems. But communes and brigades and procurement units must adhere to the various constituted policies for the encouragement of pig raising, and they may by no means capriciously change them. They must use every manner of means to do a good job of procurement work by promptly buying up all the fattened hogs that commune members want to sell. As regards problems such as refrigeration, freezing, and transportation, they must adopt a positive attitude and gradually solve them. When freezing facilities are insufficient, they should resort to salting and curing in order to preserve the pork till it can be sold. They should greatly cherish the hog raising enthusiasm of production teams and commune members, and under no circumstances should they restrict or halt procurement, deprecate quality in order to force down the price, or restrict raising of hogs simply because pigs are a little numerous, causing the enthusiasm of the masses for hog raising to be stifled. They should, in addition, devise means of opening marketing avenues and permit two courses of action. Once state procurement quotas have been satisfied, they should encourage commune members to slaughter hogs for their own consumption and for sale in rural markets. They should establish and perfect diverse systems of responsibility for production, operate additional collective hog farms, and continue to encourage commune members to raise hogs. They should promote superior breeds, promote livestock feed for the hogs, and work at scientific raising of hogs to increase the rate of pork production, thereby continuing the development of hog raising and production.

9432
CSO: 4007

PREVENTING LOW TEMPERATURE, COLD DAMAGE TO CROPS DISCUSSED

Beijing NONGCUN GONGZU TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 5, 5 May 80 pp 17-18, and 28

[Article by Rao Xing [7437 5281], Director, Central Meteorology Bureau: "Master the Laws Governing Coimate; Lay Scientific Plans for Agricultural Production:]

[Text] China is located in the southeastern part of the Eurasian mainland. Its northwest plunges deeply into the continental heartland, and to the southeast it faces the boundless Pacific Ocean. This, plus a complex topography, results in a marked monsoon climate.

A monsoon climate has three major characteristics. One of them is four distinct seasons with wide variations in temperature. Summer temperatures in China are from 1 to 5 degrees higher than for places at the same latitude (except for deserts) in neighboring countries. In most places there are four distinct seasons, and differences between daytime and nighttime temperatures are from 5 to 6 degrees greater than for Japan or India. This is greatly advantageous to the growth of thermophilous crops such as paddy rice and cotton. A second characteristic is copious amounts of rainfall just at the crucial stage of crop growth. Summer rainfall as a percentage of year round precipitation is 50 percent in South China, between 50 and 60 percent in the basins of the Yangtze and Huai Rivers, and from 60 to 70 percent in North China, Northwest China, and the Northeast. Since the time of arrival each year and the strength of the monsoon varies, the amount of precipitation also varies. Consequently, partial or fairly extensive droughts or waterlogging can take place. This is a fly in the ointment. A third characteristic is great diversity in types of climates. China has semi-tropical, temperate, and frigid climatic regions, which are extremely favorable for the growth of all kinds of crops and for the development of agriculture.

In short, China's climatic resources are abundant and varied. Conditions for the development of agriculture are quite superior and offer a great potential. As for disasters caused by the weather, such as droughts and waterlogging, typhoons, torrential rains, hailstorms, high winds, and low temperatures that cause freeze damage, every country has them. China has devoted a lot of labor to the control of drought and waterlogging and to the capital construction of farmlands. Remarkable achievements have been made, and ability to prevent and combat calamities has been increased. Nevertheless, quite a few places are still dependent on the heavens for their food. This article concentrates discussion on cold damage and

low temperatures, because the extent of harm it does is greater than from other causes. As people say: "A swath is hit by hailstones, and drought or waterlogging covers a tract, but low temperatures and cold damage kill everywhere." Yet, if we will only change our farming system, respect science in our mix of varieties, and truly act in accordance with the laws governing climate, putting more effort and strength into guarding against low temperatures and cold damage, cold damage can be prevented and consistently high output can be obtained. I intend to present below some superficial views on this problem.

Harm to Agricultural Production by Low Temperatures and Cold in Different Areas

1. Harm Done in the Three Northern Regions by Low Temperatures and Cold Damage. One crop per year is harvested on the Altai and Dacheng plains areas of the Northeast, Nei Mongol, Gansu, and Xinjiang. Under normal circumstances, accumulated temperatures are just sufficient for the varieties of crops currently being farmed, and there is no room for maneuver at all. Consequently, if low temperatures occur at any time during the growth period, output will be impaired. In the Northeast and Nei Monggol, the laws governing the occurrence of low temperatures are virtually identical. The adverse effect of low temperatures during June and August are more noticeable than at any other time during the growing season. Output in Nei Monggol is more inconsistent than it is in the Northeast. When low temperatures occur, annual output declines by as much as 20 percent or more, and Nei Monggol is more prone to harm from early frost. In the Northeast, 1978 was the greatest bumper harvest year since the founding of the People's Republic, but an early frost occurred in August in Nei Monggol, which reduced output by more than 20 percent over 1977. If accumulated temperatures in the Northeast are 200 degrees lower than normal, grain output will decline by about 14 percent. If they are 200 degrees higher, grain output will increase by about 22 percent. In some parts of Gansu and Xinjiang, the threat from low temperatures is greatest during August and September. In the Altai and Dacheng regions, when average May and A-gust temperatures are lower than 18.5 degrees serious reduction in rice output results. When average temperatures in September are lower than 15 degrees, corn yields are diminished; when they are higher than 16.5 degrees, yields increase. Secondly, in most parts of southern Liaoning, North China, and Xinjiang, accumulated temperatures are more than sufficient for the growth of one crop a year, but not sufficient for two crops a year. Low temperatures in June cause delayed ripening of the winter wheat. This not only affects summer sowing, but also affects the timely sowing of seeds for winter wheat. In Beijing, for example, should accumulated temperatures from late August until late September be greater than 845 degrees, output will be high from crops sown in summer, and they will be ready for timely harvesting. If, however, accumulated temperatures are lower than 845 degrees, output will be impaired, and harvesting of the late crop will be delayed, with adverse consequences for the timely sowing of seeds for winter wheat. In the Tarim Basin of Xinjiang, plantings of dryland cotton of a medium-maturing type will be assured sufficient warmth, but should long fiber cotton be planted instead, in some years reduced output will result from low temperatures. In the long fiber cotton growing region of South Xinjiang, if accumulated annual temperatures are greater than 4000 degrees and average September temperatures are greater than 19 degrees, increased output will result. When temperatures are less than this, output will decrease. In the dryland cotton growing region of North Xinjiang, when accumulated temperatures during May and September average more than 17.5 degrees, increased output may result; otherwise reduced yields may result.

2. Threat Posed by Low Temperatures and Cold Damage to Areas South of the Yangtze River Basin. Low springtime temperatures mostly threaten the growth of early rice seedlings. Seedlings are usually grown between late February and late March in South China, and between late March and late April in the middle and lower reaches of the Yangtze River Basin. If a bout with cold air occurs, action must be taken to prevent rotting of seedlings. According to statistics, from 1960 until 1978, the probability of low temperatures occurring during the seedling growing season in South China and in the middle and lower reaches of the Yangtze River Basin was greater than 30 percent. In 1976, mid March to early April temperatures in South China tended to be from 3 to 5 degrees lower than normal, causing the rotting of seedlings over wide areas, and a delay of about 15 days in the planting of the early rice crop. In recent years, the frequency of occurrence of low temperatures during June in the South China area has been greater than in the past. Daily temperatures have averaged less than 20 degrees, to the impairment of heading and blossoming of early rice. In the Yangtze River Basin, should daily temperatures during May average less than 15 degrees, the early rice crop will green up late, tillering will be less, differentiation of young panicles will be adversely affected, and reduced output will likely result. The occurrence of low temperatures during the heading and blossoming period of late crop autumn rice is popularly known as "cold dew wind." Generally speaking, average daily temperatures of less than 20 degrees over a period of from 3 to 5 days will interfere with normal pollination. At the present time, late rice grown in the middle and lower reaches of the Yangtze River forms heads and blossoms in mid September. Should there be a strong southward movement of cold air occurring in conjunction with a typhoon during this period, output will be drastically reduced. Low temperatures during winter principally imperil citrus and rubber. Generally speaking, citrus tolerant of cold will sustain damage at temperatures of from -7 to -9 degrees. At temperatures of from -10 to -11 degrees, cold damage will be serious or killing. The growing of rubber trees is also restricted by low winter temperatures. Places in China suitable for the growing of rubber trees include Xishuangbanna and Hainan Island, with test plantings in parts of Guangdong and Guangxi provinces. It is necessary, however, to select favorable U-shaped topography on the leeward side of slopes for planting, otherwise cold damage is likely to occur.

Defenses Against Low Temperatures and Cold Damage

People have gradually come to understand better low temperatures and cold damage in recent years. This is attributable to the following:

(1) Observation of climatic changes over large areas of China show that beginning in the 1950's and continuing to this day, the trend of temperature changes in the climate has been downward. Though changes in temperatures during this period have been from moderate to slight, the adverse effects of low temperatures and cold damage on agricultural production has become increasingly apparent. During the 1970's, damage from coldness and low temperatures averaged once every 3 or 4 years.

(2) The as yet incomplete understanding and mastery by the people of the laws of climatic changes, plus the sometimes inadequate planning of production has intensified the extent of damage from cold temperatures. In China's northeastern region, for example, where early and medium-maturing varieties used to be grown, a change was made during the 1960's to the promotion of medium and late-maturing varieties. In the northern part of North China, three crops were harvested every 2 years, but subsequently two crops every year were promoted. In the Yangtze River Basin, formerly a single crop of rice or two crops of rice and wheat were

grown, but later on two crops of rice were planted, because up until the time this was done, fullest use had not been made of heat resources and output was quite low. Adoption of these changes to the system are necessary, but in the process of changing the system, diligent attention must be given to the matching of crop varieties and to the intensification of field care. Unless this is done, little will be gained and much lost.

How can harm from low temperatures be reduced or entirely avoided? The most important rule is to plan agricultural production in accordance with climatic conditions. Action to both "prevent" and "avert" damage from low temperatures may be taken. "Averting" low temperature damage is most important, and it is also attainable. "Prevention" is an ancillary measure to be taken. In a situation in which the entire country has been divided into agricultural regions and climatic regions, the three northern areas of China must select matched varieties suitable to the local area. Selection of varieties for matching for which the rate of assurance of sufficient accumulated temperatures is 85 percent is quite suitable. In this way, consistent output and increased output for 85 years out of 100 may be assured. In the remaining 15 years, when accumulated temperatures are somewhat low, there will be either reduced yields or average yields. In years of high temperatures, yields will be bumper; in years of average temperatures, some increase in output will occur; and in years of low temperatures, yields will be reduced. Secondly, suitably early sowing to meet the crops' needs for heat may be done in an abbreviation of the period for sowing of seeds. By mixing together chemical fertilizer and barnyard manure, even and sturdy plants will grow and early tillering will take place in what the masses term, "born rich." Loosening of the soil and weeding in mid-season plus application of fertilizer at the right time is also effective in combating low temperatures. Prefectures to the south of the Yangtze River Basin should strive to achieve "three avoidances," namely, sowing of seeds for the early rice crop at the proper time so as to avoid the rotting of seedlings and low temperatures in June; keeping seedlings for the late rice crop in seedling beds long enough so they will avoid harm from the cold dew wind during heading and blossoming; winter planting must be done on time and harvesting must be done early to avoid delays in transplanting the early rice crop.

In order to achieve the "three avoidances" it is first necessary to do a good job in planning production for the entire year, making sure lock link is closed and that all the links are closed together tightly. Sowing of early rice should be done first in seedling beds that face the sun and are out of the wind, and planting of seeds done at the end of the cold season at the beginning of the warm season when temperatures have stabilized at above 12 degrees. If early rice is sown too early during the season of low temperatures and numerous overcast and rainy days, not only are the seeds and the seedlings prone to rot, but the plants will also be exposed to low temperatures in June when they are strengthening, forming heads, and blossoming. For the late rice crop, attention must be given avoidance of harm from the cold dew wind.

Next is scientific matching of varieties. In Shunde County in Guangdong Province, for example, late crop variety "Guichao No 2," which has a 140 to 150 day growing season, was chosen for use as the early crop rice in 1978. Seeds were sown on 19 February, and seedlings were transplanted on the vernal equinox. In mid June, heading and blossoming took place, and harvesting was done at the end of July, the "dragon boat water" [around the 5th day of the 5th lunary month] thereby being avoided. For the late rice crop, sitting autumn variety, "Guichao No 2"

was selected. This variety has a growing period of about 110 days. Transplanted before the "beginning of autumn" [around 7 August], it formed heads and blossomed during late September and early October, thereby avoiding harm from the cold dew wind. For the entire county, average yields for both crops were about 1400 jin per mu. In another example, the Tonggu Production Brigade in Xinyi County harvested a bumper crop when output declined elsewhere throughout the county as a result of sensible matching of varieties.

Though the masses of peasants have abundant practical experience with changes in the farming system and the matching of varieties, there are also definite limitations in a generally fairly large safety factor. This is the primary tactic in the struggle against the heavens under current social conditions. We must summarize the experiences and the lessons of numerous years of changes everywhere in the farming system, and formulate a plan for matching varieties through the adaptation of methods to local situations that can be used in practice.

In summary, under present conditions, if we will simply be diligent about planning production in accordance with the laws governing climate, seek truth through acts in rational matching of varieties, intensify field care, look ahead with the past in mind, and do overall planning, we can harvest consistently high yields in agriculture.

9432
CSO: 4007

HYBRID RICE SEED PROPAGATION WITHOUT USING SEEDBEDS FOR FEMALE PARENT

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] In Chinese No 4, 15 Apr 80 p 2

[Article by Zhang Zhongliang [1728 0112 5328] of the Scientific Research Station of the Haifeng General Farm of Shanghai City: "Seed Propagation of Hybrid Rice Without Using Seedbeds for the Female Parent"]

[Text] In seed propagation of hybrid rice, the aftercrop for the seedbeds of the female parent is frequently difficult to arrange because of the great differences in the sowing times of the two parents when the female parent is sown 35 to 60 days later than the male parent. Especially in seed propagation over large connected areas, the problem of strict quarantine is outstanding, and some areas are even left to waste and not planted. To solve this problem, we conducted several experiments in seed propagation of hybrid paddy rice without first keeping seedbeds for special use by the female parents during the past 3 years and good results were obtained and the method has been popularized.

I. Seed Propagation in the Seedbeds of the Female Parent

Seed propagation in the seedbeds of the female parent mainly suits hybrid combinations whose male and female sowing times differ by 35 to 45 days, for example, the female parents with longer growth periods such as Shan you No 2, Shan you No 3, Wei you No 2 and Wei you No 3. The trenches in the seedbeds should be as narrow as possible, the most suitable width is 6 to 7 cun. The seedbed should be facing east-west (to facilitate pollination by wind). The width of the surface of the seedbed should vary according to the row distance of the female parent plants and the differences in the ratio of the rows of the female and the male plants. Taking a row distance of 5 cun for the female and a ratio of 1:6 between the male and female rows, the width of the surface of the seedbed should be 3.7 chi. The actually sown width of the female plants is 3.3 chi, as shown in figures 1 and 2.

Before sowing, a string is pulled across the north side of the seedbed 4 cun away from the trench of the seedbed and seeds are sown along this line as samples. Then the seeds are sown uniformly (do not sow seeds to the north of the line) and then the seeds are compacted. It is best to separately transplant the second or third group of male plants after 2 to 3 days and then clean the seedbed trenches once more.

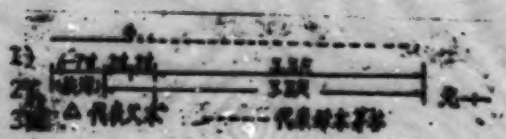

Figure 1. Illustration showing sowing of female parent plants, and male parent plants after transplanting

Key: 1) 6-7 cun 2 cun 2 cun 3.3 chi
2) Trench of seedbed 3.7 chi North
3) Δ represents male parents
----- represents female budding seed grains

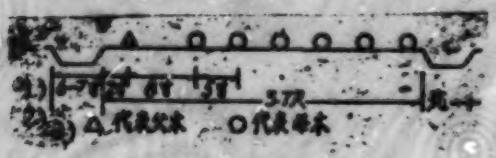

Figure 2. Illustration showing female parent plants after transplanting

Key: 1) 6-7 cun 2 cun 6 cun 5 cun
2) 3.7 chi North
3) Δ represents male parent
o represents female parent

II. Cultivating the Female Seedlings in Seed Propagation Fields

Female seedlings are cultivated in the large seed propagation fields of Nanyou varieties. This requires leveling the empty land in between rows of the transplanted male plants and preparing it as seedbed. The width of the surface of the seedbed varies according to the row distance between the male and the female plants and the difference in the ratio of the female and the male rows. Before sowing, strings are pulled along the south side of the seedbed 4 cun from the male parent plants (to facilitate operation) and 2 cun on the north side and samples are sown along these lines. The seeds are sown when the hardness of the seedbed is appropriate and the seeds are compacted in time to prevent damage by birds.

III. Direct Sowing and Seed Propagation of the Female Parent

Transplanting the male parent plants and directly sowing the female plants for seed propagation can be further tested and popularized in places where land is plentiful and labor is short. Machine sown rice seeds should be forced to bud until the seeds show white. When packing the seeds by hand (hold the budding seed in the hand and apply some force to place half of the budding seed into the soil to help the seed root manually), the roots and buds should be longer. This prevents mud from covering the seeds and also prevents the seedlings from shifting.

The amount of seeds sown should vary according to the density of planting and the texture of the soil. Generally the amount used should be 5 percent more than the amount of seeds used for transplants in large fields. Because the tillering node of the directly sown rice plants is lower than those transplanted and because they do not have a period for returning green as transplanted seedlings have, therefore, the difference in the time of sowing of the male parent and the directly sown female parent generally is longer than that when both the male and female parent plants have been transplanted by 5 days. Otherwise, the flowering periods will not easily meet.

Management of water and soil of the three methods described above are basically similar. Before greening, the plants should be irrigated during the day and the fields should be drained during the night. After greening, a water layer should be maintained. This way will benefit the rooting of the small seedlings and will not hinder the normal growth of the male parent plants. The remaining measures of management are generally the same for seed propagation in large fields.

9296
CSO: 4007

SOWING DRY, WET SEEDS SIMULTANEOUSLY RAISES CORN POLLINATION PERCENTAGE

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 4, 15 Apr 80 pp 8-9

[Article by Tang Chengwen [0781 2052 2429] of the Neijiang County Science Committee of Sichuan Province: "Sowing of Dry and Wet Seeds Simultaneously Raises the Percentage of Pollination of Corn"]

[Text] Corn is a monoecious cross pollinated crop. The natural crossing percentage is about 95 percent. Under high temperatures and low humidity, the percentage is only 65 to 80 percent or less. This is because male flowers blossom earlier than the female flowers and the flowering period lasts only 7 to 8 days. If the temperature at the time is higher than 32°C, the relative humidity is lower than 30 percent, the pollen will quickly die. The period between the time when the filament of the female flower emerges from the bract and the time all the filaments have emerged lasts only 4 to 6 days, and the second and third days after all filaments have emerged are the time when the strength of pollination and fruiting are the strongest. After 11 to 12 days the fruiting strength rapidly drops. The filaments of the central part and the base of the female spike of corn emerge from the bract first, then those above and below emerge. The filament at the tip of the spike emerges the latest. Frequently, the percentage of cross pollination is not high because of a deficiency of pollen during the latter period or deficient nutritive conditions, causing bare tips or "scattered favus corn" and yield is affected.

To solve the problem of the deficiency of pollen of corn, the major method is manually assisted pollination but this method requires a lot of work. In recent years, farmer technician Li Jigui [2621 0679 6311] of the Sujia Commune of Neijiang County in Sichuan Province developed a method to use dry and moist seeds for simultaneous sowing and allowed the flowering periods to miss. This method can also achieve the result of assisted pollination so that the female flower will be fully pollinated.

The method is to first soak part of the seeds of corn in hot water (water temperature 60°C) for 24 hours (while soaking, the water surface should be above the seeds by 2 to 3 cm). Afterwards, the moist seeds are sown simultaneously with the dry seeds that were not soaked. When sowing, the dry and moist seeds are sown in a row ratio of one to one, (i.e., sowing one row of wet seeds and sowing one row of dry seeds), or two to one (i.e., sowing two rows of moist seeds and

then sowing one row of dry seeds), or three to one (sowing three rows of moist seeds and one row of dry seeds). Although management is entirely the same after sowing, the soaked seeds will germinate early and will flower early. Six to 7 days after corn plants grown from the moist seeds head and flower, the corn grown from the dry seeds will have all headed and flowered, supplementing the pollen of the male flowers and providing an opportunity for the female flowers, especially flowers that have headed late to be pollinated, realizing naturally assisted pollination, and raising the fruiting percentage of crossed pollination. This reduced bare tips and "scattered favus corn" greatly and increased yield. In 1979, one to one sowing produced an increased yield of 6.5 percent, two to one sowing produced an increase of 13.9 percent, and three to one sowing produced an increase of 19.3 percent in yield.

9296
CSO: 4007

PLANES USED TO SPRAY CHEMICALS TO PREVENT DRY HOT WIND DAMAGE

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 4, 15 Apr 80 p 6

[Article by Zheng Shujin [1728 2579 6855] of the Henan Provincial Administrative Bureau of the Chinese Civil Aviation Administration: "Trial Use of Airplanes To Spray Farm Chemicals To Prevent Damage of Dry Hot Wind to Wheat"]

[Text] Our bureau and the provincial agriculture bureau have cooperated closely in the first trial use of airplanes to spray petroleum growth stimulants and dihydrogen potassium phosphoric acid over large areas to prevent dry hot wind damage of wheat and visible increased yields were realized. The masses welcomed the measures.

Henan Province is situated in the central plains and is one of our nation's wheat producing regions. But dry hot wind damage of wheat has occurred seriously. It has occurred over 80 percent of the recent years and has directly threatened the yield of wheat. According to statistics of the past 23 years, severe dry hot wind damage has occurred 9 times, medium severe dry hot wind 4 times, and ordinary dry hot wind damage 7 times. After the middle 10 days of April 1979, many regions in Henan Province suffered seriously from dry hot wind damage. To support agriculture, seize bumper harvests during summer, our bureau dispatched eight airplanes to the suburbs of Zhengzhou City and the counties of Tongxu, Rongyang, Xihua, Anyang, Wenxian, Changge and Shangqiu. Over 450 missions were flown and spraying covered over 210,090 mu. After summer harvests, the provincial agricultural bureau held a discussion meeting on the prevention of dry hot wind damage using airplanes to spray chemicals. The meeting was held at the Zhengzhou airport. Everyone believed that the use of airplanes to prevent this damage was successful and visible results have been achieved in most of the regions.

There are two types of substances for the spray used by airplanes to prevent dry hot wind damage: one is dihydrogen potassium phosphoric acid produced by the Sanmenxia Henan Farm Chemicals Plant. The amount of spray used in the trial flights was 0.2, 0.25 and 0.3 jin per mu. The diluted liquid spray was 4, 5 and 6 jin per mu. According to statistics compiled by the 11 brigades that conducted airplane spraying operations in suburban Zhengzhou, 9 brigades realized increased yields, averaging a per mu increase of 30 jin. Jicheng Commune used the airplane to spray chemicals to prevent dry hot wind damage and realized a total increase

of 564,000 jin of wheat,the increase was 4.5 to 14.9 percent. This investment of an average of 0.65 yuan per mu calculated at 30 jin of increased yield per mu, minus the cost of investment, yielded a net profit of 3.55 yuan.

The other substance was the petroleum growth stimulant produced by the Hongqi Chemical Plant of Liuzhou in Liubo City, Shandong Province (containing 30 percent of effective cycloparaffin acid sodium). The amount of original chemicals sprayed by airplane per mu was 0.2 jin, the concentration of the spray was 25 times, 30 times, and each mu used 5 to 6 jin of diluted solution. According to the results of comparative epxeriments at 12 test points covered by spraying within the area of the spraying mission by airplanes in the 9 brigades (farms) of the 3 communes of Shangqiao, Pohu and Houhe and Changge County, visible increases in yields were realized at 8 test points within the area covered by airplane spraying operations. Per mu yield showed an increase of 20.3 jin over the controlled regions. Net profit per mu was 3.05 yuan. Throughout the entire county, the efforts to prevent dry hot wind damage by spraying chemicals by airplanes produced a total increased yield of 463,000 jin and an increased income of 69,500 yuan.

In general, regardless of which chemical compound was used as the spray for the airplane mission, highly effective and highly concentrated phosphorus and potassium compound fertilizer--dihydrogen potassium phosphoric acid, or the growth stimulant--petroleum growth stimulant, remarkable results of increased yields were realized. Using airplanes to prevent the dry hot wind damage is a new technique. It is highly effective, the results are good, it saves labor, conserves cost, and is very suitable for operation over concentrated and continuous wheat fields of large areas. In the future, it should continuously be promoted, popularized and used so that it can be improved and the experience can be summarized continuously in actual work.

9296
CSO: 4007

FREE POLLINATION METHOD FOR RICE EXPLAINED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 9, 15 Sep 80 p 15

[Article by Sun Kaiquan [1327 7030 6896], Ba County Agricultural Institute, Sichuan Province: "Free Pollination Method for Hybrid Rice"]

[Excerpt] Usually when people breed hybrid rice, they use either a writing brush or a pair of tweezers to pick up the pollen. The work is highly difficult; the speed is slow; and efficiency is low. One person is able to handle only a few hybrid combinations in a day. For the past several years, we have had very good results from the use of the free pollination method with hybrid rice. Its advantages are as follows: (1) A from three to five fold increase in efficiency over hand pollination. (2) With the use of one or several panicles of male parents for pollination, the quantity of pollen is large, the pollination area large, the time abundant, the pollen collection time short, and the vitality of the pollen vigorous, with the result that the fruiting rate is high, and the hybrid fruiting rate can be increased to 70 or 80 percent. (3) At the time of pollination, there is no impairment of the pollen from high temperatures, wind, rain, or such environmental factors.

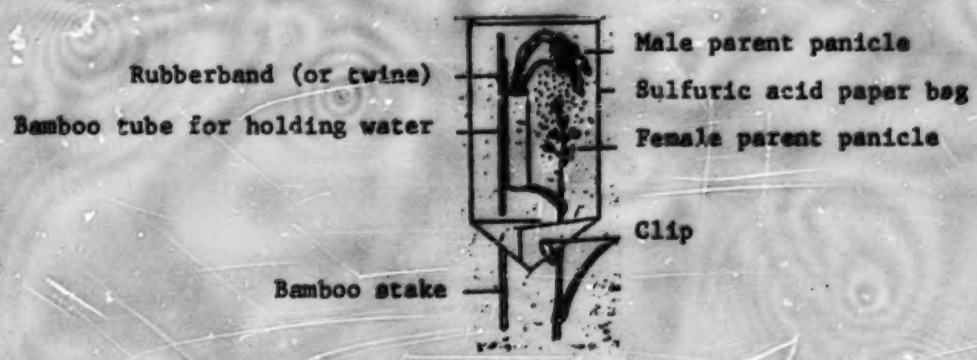

Illustration of free pollination

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CSO: 4007

GENTAMYECIN EFFECTIVE AS ANTICONTAMINANT FOR NURTURE OF ANTHERS

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 9, 15 Sep 80 p 13

[Article by Li Chaocan [2621 2600 3503], Rice and Wheat Institute, Fujian Provincial Academy of Agricultural Sciences: "Chemical Anticontaminant for Nurture of Anthers--Gentamyecin"]

[Text] Bacteria and molds are the great enemies of tissue cultures, and they are currently the most frequently seen microscopic organism contaminating the cultures of paddy rice anthers, particularly during the summer season with its high temperatures and high humidity. The contamination rate in cases where bacteria-free control conditions are not so good is usually from 30 to 40 percent, and sometimes as high as 70 to 80 percent. This results in losses and waste of culture materials, and of human and material resources.

In 1978 and 1979, acting on the basis of successful experiences in the clinical application of antibiotics, and bearing in mind the characteristics of culturing of anthers in paddy rice, we selected some broad spectrum antibiotics fairly tolerant of high temperatures and high pressures, and that were fairly stable in the presence of light and acidity or alkalinity to conduct experiments in the control of contamination. The results showed gentamyecin to be most effective in the control of contamination.

Gentamyecin is sold for use in medical injections. Following dilution to a certain viscosity, it was put into the culture medium with a blank being prepared as a control as well. It was submitted to 15 pounds pressure for 15 minutes to kill the bacteria. Materials used in the experiments were nine combinations of the progeny of common hybrids and the F_1 generation of hybrid rice. Following disinfection and inoculation of the anthers, culturing was done following usual procedures.

Effectiveness of gentamyecin: The results of 2 years of experiments show a striking decline in the statistical contamination rate 30 days following inoculation for both bacteria and molds, with a from 59.1 to 74.0 percent decline in the overall rate of contamination (Table 1).

Effects of gentamyecin on culturing of rice anthers: In order to check on whether there were any adverse effects produced by the gentamyecin in recovery

Table 1. Gentamyecin Anticontamination Results

Year	Treatment	Inoculation Control	Bacteria Contamination Control	Bacteria Contamination Percent	Mold Contamination Control	Mold Contamination Percent	Total Control	Total Percent	Percentage
1978 early crop	Control	45	10	22.2	4	8.9	14	31.1	100.0
	gentamyecin 2 ppm	61	3	4.9	2	3.2	5	8.1	26.0
1979 early crop	Control	146	19	13.0	6	4.1	25	17.1	100.0
	gentamyecin 5 ppm	114	7	6.1	1	0.9	8	7.0	40.9

Table 2. Comparison of Damaged Anther Tissue and Green Seedlings Conductance Rate

Year	Treatment	Number of Anthers Inoculated	Number of Healed Tissues	Conductance rate of healed ones (percent)	Number of healed green seedlings	Green seedlings conductance rate (percent)
1978	Control	768	116	15.1	--	--
	gentamyecin 2 ppm	875	141	16.1	2	2.3
1979	Control	7,676	379	4.9	9	1.1
	gentamyecin 5 ppm	7,870	504	6.4	11	1.4

of damaged tissue or the conductance of green seedlings, 60 days following inoculation and 30 days following metastasis of the healed tissue, the healed tissue and the frequency of conduction of the green seedlings for each of the 9 combinations was checked with no apparent adverse results (Table 2).

Our experiment showed a desirable effectiveness in control of contamination when from 2-5 ppm of gentamyecin was used in the culture of paddy rice anthers. Not only was effectiveness marked but there were no side effects as well. The Lianjiang County Agricultural Institute in Guangdong Province and the Ningde County Superior Varieties Farm used our method with equal effectiveness. In 1979, we used gentamyecin in the culturing of endosperms of the late rice crop, also achieving quite good results in anticontamination.

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WINTER RAPE DEVELOPED IN HUANG, HUAI JIANG REGIONS

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 9, 15 Sep 80 p 11

[Article by Yang Jingze [2799 4842 3419], Oils Institute, Chinese Academy of Agricultural Sciences: "Great Potential for Development of Winter Rape in the Huang Jiang and Huai Jiang Regions"]

[Excerpts] Within the past several years, the development of winter rape production has been very fast in Henan, in Yuncheng Prefecture in southern Shanxi, in Fuyang Prefecture in north Anhui, in Liaocheng and Heze Prefectures in Shandong, and in Xuzhou Prefecture in northern Jiangsu (i.e. at between 32 and 35 degrees north latitude). These are newly developed winter rape areas. During May of this year, the writer began a preliminary survey in those areas where I made onsite visits, held discussions, and conducted examinations of the fields. The vast prospects of this region for the development of rape production impressed me deeply. The potential here is great for the development of rape production.

Prior to 1970, the area of southern Henan Province sown to rape amounted to only from 20,000 to 50,000 mu. In 1980, the area harvested amounted to 3.5 million mu (6 million mu was sown, but more than 2 million mu froze to death), which shows how fast the area sown to rape expanded. As another example, Fuyang County (north of the Huai River) in northern Anhui began to grow rape in 1974. In 1979, it grew 92,000 mu of it, and by 1980, this had increased to 150,000 mu, with projected per unit yields reaching around 100 jin.

In the Huai River area, not only was there rapid growth in the area sown to rape, but rape also gradually came to be the first crop in a two crop system of farming there. The system changed from the previous one of a single crop a year (one crop each year of spring corn, or cotton, or sweet potatoes) to two crops each year or five crops every 2 years. The major systems of crop rotation were as follows: (1) A two crop system of grain and rape: winter fallow + spring corn (or spring sweet potatoes). (2) A two crop system of cotton and rape: winter fallow + cotton--rape (sown directly) transplanted + cotton. Additionally, there was rape + sesame, or rape + tobacco in two crop systems. After several years experience, it was generally felt that these crop rotation systems were good ways to husband the soil's fertility while

combining soil use with soil nurture, and to increase income. In this region, much land lies fallow during winter. According to statistics, Henan Province has more than 20 million mu of fallow land in winter, and Funan County has 530,000 mu. In addition, large areas of the plains of the Yellow, the Huai, and the Hai rivers are saline and alkaline from which the output from growing of rape is higher than from the growing of wheat, and so the masses are now quite happy to grow rape. From this may be seen that the area of the Yellow and Huai rivers may very well become China's major new rape producing area.

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BRIEFS

FUJIAN DISCUSSION MEETING--A provincial discussion meeting on agricultural modernization, ecological balance and agricultural scientific dialectics was held in Fuzhou in late October. The meeting received 280 reports and 29 professors and experts read their report during the meeting. The meeting was divided into 13 groups to study different subjects centering on agricultural modernization and ecological balance. The meeting also discussed how to speed up agricultural production in Fujian Province. [Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 5 Nov 80 HK]

FUZHOU INDISCRIMINATE LUMBERING--The Fujian Provincial People's Government recently issued a report prohibiting indiscriminate lumbering in the province. The report said: the indiscriminate lumbering situation has been getting quite serious recently, and forest resources have been seriously sabotaged. This will in turn affect the ecological balance, the progress of the four modernizations and the people's livelihood. The report demanded that: 1) all places must work in accordance with the state's timber production quota and must not exceed the quota; 2) people's governments at all levels must organize forces to inspect timber production and insure that it is in accordance with the state's quota; 3) departments other than the forestry department are not allowed to lumber in the forests and procure timber; 4) it is forbidden to fell young trees and those who violate the regulation must be severely punished; 5) it is necessary to strictly follow the transportation management method stipulated by the provincial people's government; and 6) it is necessary to justly settle disputes concerning lumbering. [Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 3 Nov 80 HK]

AGRICULTURAL SEMINAR--A Fujian provincial seminar on agricultural modernization and ecology was held recently. All participants at the seminar pointed out that forest resources have been seriously sabotaged by indiscriminate lumbering. They held that: 1) it is wrong to put the blame on the masses because the leaders should have exercised leadership over them; 2) the present indiscriminate lumbering directly affects the progress of the four modernizations. There are now only 8,900 cubic meters of timber left in the province and some 2,000 cubic meters are scheduled to be cut down later this year. Thus, in a few years, the paper mills and hydroelectric power stations will have to stop functioning since there will be no more trees. The problem is serious; 3) we must immediately change this situation. [HK101402 Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 27 Oct 80 HK]

CSO: 4007

NEW POLICY TO STIMULATE SUGARCANE PRODUCTION ANNOUNCED

Guangzhou NANFANG RIBAO in Chinese 20 Sep 80 pp 1, 4

[Article: "Important Policy Toward Increasing Cane Sugar Production in This Province"]

[Text] The Guangdong Provincial People's Government recently published a document announcing a new policy concerning production and procurement of cane sugar for the next 5 years. This is an important decision. It is beneficial in the sense that it is capable of mobilizing the people's initiative sufficiently to accelerate sugarcane production. It is beneficial because it is capable of rationally readjusting the structure of agriculture and increasing the income of the commune members. It is beneficial to the nation because it is capable of encouraging people to make a greater contribution to the nation. It is expected that the leaders at every level will quickly propagandize this policy among the commune members, and conscientiously implement this policy in order to mobilize them to firmly grasp this fall's planting season to plant more sugarcane according to what the local circumstances dictate. By doing so, they are to lay down a firm foundation for a significantly increased harvest of sugarcane and production of cane sugar during the next pressing season.

This province is endowed with conditions favorable to the development of cane sugar production. The natural conditions of Guangdong belong to the tropical or subtropical climate zone where sugarcane can grow fast with high sugar concentration. This kind of favorable conditions are seldom found elsewhere in this country. In spite of this, the sugarcane production per unit area in this province is still quite low today; only about 3 tons per mu on average, but with a great potential for growth. As to the sugar refining facilities, there are altogether more than 130 sugar refineries in this province, with 30 percent of the production capacity yet to be utilized. The potential in this area also provides favorable conditions for the development of sugarcane production. As to the technical force and the production experience, this province has a long history of sugarcane cultivation, and it is known and honored as "the home of sugarcane." It is one of the important sugarcane production bases of this nation. The masses have accumulated valuable experiences over the years necessary for achieving high productivity. Since Liberation, a troop of specialists meeting a certain level of standards has also been cultivated. Because Guangdong Province is in possession of these outstanding advantages at a time when the economic value of cane sugar is high and the demand for sugar by the people as well as the nation is also growing very rapidly each day, it is time for Guangdong to reorganize the structure of its agricultural

economy and aggressively develop its sugarcane production by taking full advantage of the natural law and the economic law. The new policy on production and procurement of cane sugar published by the people's government at this time is in complete harmony with the actual circumstances of Guangdong. It is also in agreement with the policy of the Party Central Committee and with the individual profit of the masses of this province.

The new procurement policy concerning cane sugar is in general as follows. The basic rule which is applicable over the entire province reads: "The base figures for sugar and grain production have been determined. Production in excess of the base figure will be rewarded; a ton of grain for every ton of sugar; and deficiency, punished likewise. This rule is to be applied over the next 5 years." (This rule shall be referred to as "exceeding the base figure, a ton of grain for every ton of sugar" for short hereafter.) The objective of this new policy is to mobilize the initiative of the vast majority of the commune members to plant more sugarcane, to increase the commodity rate of cane sugar, and to bring more profit to all three sides, including the nation, the collectives, and the individual commune members. In addition to the regulations concerning such matters as nitrogen fertilizer being sold preferentially to whoever satisfies the base figure of sugarcane procurement, bonus to be given in addition to the set price, the profit made by the sugar refineries to be returned in part to the cane growers, and the sugar that may be retained for personal use, the new policy includes a clause which states that a ton of grain will be awarded to whoever produces sugarcane in excess of the base figure of such amount equivalent to a ton of sugar. At this juncture, whether the base figure determined by the government is reasonable or not, or whether it is feasible to achieve overproduction, has a very important significance. Speaking in terms of the entire province, the base figure for sugarcane production for the 1981-82 pressing season is 20 percent less than that for the 1980-81 pressing season; or 5.2 percent less than the tentative base figure decided during the August meeting of the Provincial Sugarcane Production Conference this year. This way, not only may "the contradiction between sugar and grain" find solution, but the local units can also achieve, through their effort, overproduction and win award. Moreover, the base figure is applicable for the next 5 years. It shall not be altered no matter how much overproduction may be achieved, in order to encourage overproduction. Many areas have reflected that there are great potentials for increased sugarcane production so long as the policy is carried out conscientiously. The sugarcane production can be significantly increased; in fact, far greater than the base figure that has been published if each area will do according to what the local circumstances dictate and implement the multifaceted combined productivity responsibility system.

In cashing-in the award of "a ton of grain for every ton of sugar," different areas may adopt different methods of accounting. Some areas may use the production team as the accounting unit; others, an entire area. After repeated study with up and down, the majority of the areas and the suburban districts have decided to use the production team as the accounting unit. That is to say, that each production team will receive the award of "a ton of grain for every ton of sugar" according to its overproduction above and beyond the base figure, regardless of how other production teams of the same area may have done. This way, each production team will be aware of its situation at all time so that they may feel the task more challenging and work more diligently in order to achieve overproduction and win the award as much as possible without the fear of being "pulled back" by the

teams with lower productivity. The provincial people's government has also published special regulations based on the special circumstances of certain areas, allowing these areas to contact the provincial government directly with matters concerning accounting and cashing-in of the award related to "production in excess of the base figure; a ton of grain for every ton of sugar," (the regulations concerning encouragement within the base figure remain the same with the rest of the province) in order to facilitate drafting a practical and concrete regulation according to the special local circumstances so that the commune members of these areas may be equally motivated.

At the same time the award based on the overproduction is being implemented, the policy has also spelled out clearly that those units which do not meet the base figure production requirement must sell grain to the government in place of sugar. (Loss of production due to natural disaster shall be exempted from this regulation after investigation and approval.) This type of regulation, having both award and punishment, is expected to strengthen the sense of responsibility of each production contract, and to encourage and urge each production team to exert themselves to accomplish the sugarcane production plan and more.

The policy states clearly that a portion of the profit made by the nationally operated sugar refineries shall be returned to the sugarcane producers. This measure is expected to demonstrate a significant, positive action both politically and economically. It is expected to increase the income of the commune members. It is expected to strengthen the tie between industry and agriculture. It is further expected to increase the initiative of the commune members who will supply more and better raw material for the sugar refineries with greater self-confidence. With an increase in the amount of sugarcane supplied by the farmers, development of the cane sugar industry can be guaranteed. At the same time, the nation's financial income can be increased, benefiting the nation as well as the people. It is expected, therefore, that all concerned departments will understand these principles and will implement this new policy conscientiously and thoroughly. The work related to return of profit to the people involves many areas of consideration. Investigation and study must be carried out carefully by the joint industry-agriculture coordinating committee consisting of persons representing both sugar refineries and communes and production teams. They must negotiate cooperatively in order to determine a plan which will protect the profits of all sides concerned, including refineries, production teams, and the individual commune members. They must strive to equalize as much as possible the profits returned to the adjacent sugarcane growing areas in order to facilitate making plans for the assignment of sugarcane growing areas to each sugar refinery.

This fall's sugarcane planting season has begun. The leaders at every level must carry out his production plan and work related to implementation of the new policy according to the published policy and base figure. Above all, he must widely propagandize the new policy and, at the same time, quickly bring the production plan and the base figure to the production team through the contract signed by both sides--the refinery and the production team. Making arrangements for the areas in which to plant sugarcane requires an overall consideration. Each area must take care of both grain and sugar production according to what the local circumstances dictate, and strive to achieve a full harvest for both grain and sugarcane.

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CSO: 4007

JOINTLY-MANAGED MILK PRODUCTS COMPANY ESTABLISHED

Guangzhou NANFANG RIBAO in Chinese 21 Sep 80 p 1

[Article by Shan Baiping [0830 2672 1627]: "Guangzhou Milk Products Company Managed Jointly by the Agriculture, Industry, and Commerce Established"]

[Text] The Guangzhou Milk Products Company managed jointly by the agriculture, industry, and commerce was established officially yesterday in order to engage in a specialized production and to practice joint management.

Those units which participate in this joint venture include the following three: Guangzhou Municipal Stock Farm, Shinzhou Stock Farm, and Guangzhou Municipal Milk Company. Jointly, these three units employ more than 2,500 workers belonging to the whole people ownership system and more than 3,400 workers belonging to the collective ownership system; possess a total ground area of more than 6,160 mu; own 2,187 milk cows and 625 milk sheep; and produce nearly 10 million jin of milk annually, amounting to 42 percent of the total fresh milk production in the municipality. Since the beginning of this year, under the unified leadership of the Guangzhou Municipal Agricultural Bureau, they have started a trial joint management. After a half year's effort, the three units jointly accumulated 748,000 yuan of profit, which was 143 percent more than the same period last year. They have thus demonstrated preliminarily the superiority of the joint management.

The newly established milk products company was able to provide unified leadership to the various specialty fields, processing plants, and business departments to make rational assignment of personnel, finance and materials, and to achieve systematic and coordinated operation of the production, supply, and distribution. Accounting was carried out at the three levels, including the company, the factory, and the area (team) or plant (store). The financial affairs at each level was undertaken independently in order to expand the right to independence of each basic production unit.

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CSO: 4007

SHORTAGES OF HARVESTERS REDUCES GRAIN YIELD

Beijing NONGCUN GONGZU TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 5, 5 May 80 p 12

[Article excerpted from survey data of the Agricultural Economy Institute, Chinese Social Science Academy: "Shortage of Harvesters in Heilongjiang Province"]

[Text] The conflict between machine sowing and harvesting on people's communes in Heilongjiang Province is conspicuous. Mechanized sowing of large areas permits the crop to ripen all at the same time, while sowing by hand would result inevitably in untimely harvesting, causing losses in dropping of grain. Statistics show that in 1978 people's communes throughout the province had 2200 combines, each one handling 58,000 mu of cultivated land when, in fact, each combine took care of only 3000 mu at most. A very great difference indeed. Because harvesting was not done on time in 1979, a loss of from 700 million to 800 million jin of wheat resulted throughout the province. Because harvesting was not done on time in 1979 in the Changan Production Brigade of Changan Commune in Fujin County, the soybeans dried and cracked open. Spot checks showed 47 beans dropped per square meter for a loss per xiang of 500 jin of soybeans. In 1979, two management bureaus for state farms in Beian lacked combines at harvest time, as a result of which rains damaged 140 million jin, reducing yields by 80 jin per mu. As of the end of 1979, not all the wheat had been harvested in Heihe Prefecture for an estimated loss of more than 100 million jin. According to a briefing provided by units concerned, if timely action is taken to bring in the harvest on time, each combine can reduce losses by 50,000 jin, and additional yields of 30 jin per mu may be harvested, which is equivalent to a 15.4 percent increase in output.

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CSO: 4007

GRASS ROOTS LEVEL CADRES' COMPLAINTS AIRED

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 3, 5 Mar 80 p 19

[Article by Yiyang Prefecture CCP Committee Office: "Proper Handling of the Problem of Cadres 'Laying Down the Burden'"]

[Excerpts] In Yiyang County in Hunan Province, the Shiqiao Commune CCP Committee zeroed in on the problem of grass roots level cadres wanting to lay down their burdens and, after much work, solved the problem quite well.

In 1979, once autumn was over, 28 people in the 89 production brigade CCP branch committees of the commune wanted to lay down their burdens, and three people were determined to serve no more. Those wanting to lay down their burdens amounted to 45.3 percent of the 128 brigade chiefs, and those who had already put their burdens aside amounted to 24.7 percent. An analysis of their reasons showed three main ones as follows:

They had not sufficiently studied the line, program, and policies of the Third Plenary Session of the 11th Party Central Committee and the Second Session of the Fifth National People's Congress. Their grasp of these matters was not deep; their ideology had not kept up with the shift in work emphasis, and it was not in keeping with the development of a new situation. They felt their work was difficult, the masses hard to manage, and the life of a cadre difficult. They said, current policies are new, and methods are new; they're hard to grasp and figure out. Some said that a drum gets hit on two sides, but we grass roots level cadres get hit from three sides if we don't do a good job: our superiors criticize us; the masses oppose us; and our families grumble against us. Some also felt that now that the masses have a lot of democracy, they not only cannot be criticized but one cannot even speak a stern word to them. If one tries to figure out ways to handle the wrongheaded ones, the work doesn't get done. Fifty percent of the grass roots level cadres who wanted to lay down their burdens had such notions.

Second, when they saw that the party's policies were good and that people were free to operate household sideline occupations and tend private plots, and that while commune members were reaping benefits, cadres were getting little, they felt they were suffering economic hardships. When some production team chiefs saw that some commune members could make as much as 40 or 50 yuan in income from household sideline occupations, they said: If I were not a team chief but could do as I pleased, I would be rich quicker than anybody. Thirty-five percent of the grass roots level cadres who wanted to lay down their burdens had this as their reason.

Third was waiting to be elected. A minority of the comrades thought about how team chiefs were elected each year and how if the masses did not like them and didn't elect them, they would suffer loss of face, so early resignation would be preferable. They said that if the masses would just elect them, they would continue to serve.

Some individual cadres were, in fact, old, physically weak, and not able to do much, or else they had numerous shortcomings or had made many mistakes in their work. They lacked prestige among the masses and truly were unable to carry on.

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BRIEFS

SUMMER GRAIN PROCUREMENT--By 10 October, Jiangxi Province had procured 2,559 billion jin of summer grain, 98.5 percent of the procurement quota. Forty-eight counties and municipalities, including counties in Yichun, Shangrao, Fuzhou and Jian prefectures and Jingdezhen and Pingxiang municipalities, have overfulfilled their quotas for summer grain procurement by some 98 million jin. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 30 Oct 80 HK]

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JAPANESE EXPERT AIDS IN INCREASING RICE PRODUCTION

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 3, 5 Mar 80 p 26

[Article collated by Chinese Agricultural Society: "Japanese Expert's Experiences With High Output Test Plantings of Rice in Jilin"]

[Excerpts] The Sino-Japanese Northeast Rice Crop Technological Exchange Group, headed by rice expert Minoru Tanaka, went last year to Gongzhuling in Jilin Province for the mechanized test planting of 150 mu of high output rice by the Rice Institute of the Jilin Agricultural Academy. Statistics from October last year show that this tract of rice averaged yields per mu of 1,067 jin, which was twice that produced by the neighboring Dayushu Production Brigade, and 33 percent higher than the output of the Rice Institute of the Jilin Provincial Agricultural Academy. The plot with highest output had per mu yields of 1250 jin.

During mid and late April last year, during the period of seedling growth, temperatures below 0° C occurred on several occasions, and in August and September, during the stage of heading and coming into milk, average air temperature was 2° C lower than usual. To have had large area high yields under such abnormal circumstances demonstrated the success of this experiment. Minoru Tanaka, the group leader, was, however, by no means satisfied. He said that during the first year of test planting, because of unfamiliarity with the local climate and soil conditions, one could get only 60 percent success. He hoped for better results from planting in another year.

The Japanese rice growing techniques are quite suited to the requirements of the modernization of rice production in China's northeast. Observers and comrades from the rice institute who accompanied the Japanese expert had a few observations to make as follows:

First, high rate of mechanization and a saving in labor. Planting of a mu of paddy rice using our old methods required 20 man days whereas the Japanese method required only 40.4 hours or a total of 5 man days. Mr Minoru Tanaka said that given familiarity with machines and an increase in worker enthusiasm for work, work efficiency could be increased. In Japan, planting of 150 mu of paddy rice requires only the labor of a man and wife plus a child (half labor).

Second, a saving in seeds. Japan uses precision sowing with about 5 jin of seeds being sown per mu (locally 25 jin were used).

Third, costs are not high from a long-range point of view. For 150 mu of land, about 15 million Japanese yen would be required for the purchase of machines and equipment. Converted into renminbi, this is 77,000 yuan annually for a value of 7600 yuan. Two thousand fewer workers would be required, amounting to 3000 yuan for a total saving of 10,600 yuan. Within 7 years the capital investment for machinery could be amortized. If well maintained, most tractors, rice transplanters, harvesters, and drying machines will last for at least 15 years, which is favorable in long-range terms. If tractors, planters, dusting machines, combines, and dryers were to be depreciated over 10 years, and plastic sheeting, seedling trays, string bags, and plastic frames [1441 7893 7539 2665] were to be depreciated within 2 to 5 years, plus chemical fertilizer, seeds, insecticide, water and electricity, labor... etc., the cost of production of 1 jin of rice would be .143 yuan. On the basis of the current purchase price of .174 yuan per jin, plus the price of rice straw (.03 yuan per jin), a profit of 60 yuan per mu could be realized. If a 50 percent increase of price is added for state purchases of excess rice, i.e. .026 yuan per jin, the profit would be 103 yuan.

Reasons why they obtained high output through the use of Japanese methods in the cold land of Jilin Province:

First, they selected superior varieties.

Second, they were careful with their technique of fertilizer applications.

Third, seedlings were grown early and they grew sturdy seedlings, with the emphasis on early.

Fourth was early transplanting and sparse transplanting.

The frost-free season in North China's rice growing area is short, and low temperatures with cold damage are the principal obstacle to high and consistent output of rice. By studying Japanese experiences with the growing of rice, and by using advanced techniques, this disadvantageous condition may be overcome.

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MEASURES ADOPTED TO PROTECT ANIMALS IN WINTER

SK130204 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 11 Nov 80

[Text] According to our sources, in struggling against natural adversities to protect animals, pastoral localities throughout Nei Monggol Autonomous Region have discarded their past practices of paying no attention to economic results and objective conditions and leaving a large number of animals to die in the winter-spring period. They are determined to protect animals unable to survive the winter and to concentrate their efforts on feeding fertile female livestock and breeding animals this winter and spring according to how much fodder grass is available.

The fattening of livestock in many areas is inadequate because of the prolonged dry spell in the region this year. Some localities suffer from a serious shortage of fodder grass, causing severe difficulties for animals in the winter and spring. In coping with natural adversities in the past, they usually have bought fodder grass from outside areas or herded their animals onto distant grasslands. This has not only cost a great deal of manpower, materials and funds but also has been detrimental to the animals. According to recent statistics, the per-year average number of animals dying as a result of shortages in the winter-spring period in pastoral areas throughout the region is 2 million.

This year various localities have summed up experiences and have decided to do what is possible to combat natural adversities and protect animals. Efforts have been made to set livestock herds according to the amount of fodder grass available and in line with the capacity of their grasslands. Regarding animals unable to survive in winter, various pastoral localities have sent 1.98 million head to some agricultural production areas, mountainous areas and a number of old revolutionary bases. The remainder have been slaughtered. The number allocated and slaughtered is 3 million head over that of 1979. In this way, not only the burdens of pastures, livestock pens and manpower are reduced, but also more than 100 million jin of fodder grass is saved. Thus, these pastoral localities are able to concentrate their efforts to protect fertile female animals, breeding animals and good breed animals successfully and to increase commune-brigade incomes.

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AGRICULTURE ADVANCES UNDER INFLUENCE OF 11TH PCC DOCUMENTS

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 4, 5 Apr 80 p 7

[Article by Party Branch, Dazhai Production Brigade, Xiyang County: "Advancing Along the Road of Thought Liberation"]

[Excerpts] In 1964, following Chairman Mao's call, "In agriculture, learn from Dazhai," under the supervision, urging, and encouragement of the people of the entire country, we made progress, and we also made mistakes and learned profound lessons. Following the Third Plenary Session of the 11th Party Central Committee, we linked the historical lessons of experience, criticized ultra-leftism, purged pernicious influences, healed internal wounds, and diligently held fast to the spirit of the Third Plenary Session of the 11th Party Central Committee and its two documents on agriculture. Agricultural production saw further development.

In 1979, total grain output for the entire production brigade was 908,890 jin from yields of 1290 jin per mu, an increase of more than 20 percent over the previous year. Total income from agriculture, forestry, livestock raising, and sideline occupations amounted to 272,373 yuan, a 47 percent increase over the previous year. Disbursements to individuals averaged 212 yuan for a 15.8 percent increase over the previous year. Distributions of grain to commune members for their consumption amounted to 556 jin, an increase of 7.1 percent over the previous year. Total accumulations for the year amounted to 54,479 yuan, or 20 percent of total income for a per capita average of somewhat more than 100 yuan. Grain sales to the state totaled 660,000 jin, or average per capita sales of 1419 jin. Grain reserves amounted to 200,000 jin for an average 2222 jin per household.

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PLANS FORMULATED FOR AGRICULTURAL MIDDLE SCHOOLS

SK081421 Tianjin City Service in Mandarin 0030 GMT 8 Nov 80

[Text] The municipal agricultural and cultural committees recently transmitted to rural county people's governments a report by the Municipal Education Bureau on a draft plan for successfully running agricultural middle schools. The committees urged all localities to firmly correct the irrational secondary education structure and steadily improve agricultural middle schools in line with actual conditions to avoid sudden great upswings and downswings in the quality of such schools. They called for efforts to solve in a down-to-earth manner all problems blocking development of agricultural middle schools and to accelerate reform of the rural secondary education structure.

The draft plan stipulates: agricultural middle schools, which combine general study with professional technical education, are an important part of rural secondary education. Agricultural middle schools should open both general knowledge and professional technical courses and establish small farms, nurseries or livestock areas, small plants or other experimental production bases to meet the needs of their professional technical education. Agricultural middle schools should follow the principle of emphasizing teaching. They must not arbitrarily stop any classes, or arbitrarily increase students' time devoted to manual labor. Departments outside the schools should also avoid assigning labor tasks to schools without authority.

The draft plan also states: agricultural middle school graduates must be placed in proper jobs. Such graduates may apply for college entrance examinations, especially for agricultural colleges. Commune-run plants, farms and tree nurseries are encouraged to give priority to agricultural middle school graduates when recruiting workers.

The draft plan urges all pertinent departments to help in turning agricultural middle schools into important bases for agrotechnical training activities and for training qualified agrotechnicians.

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CONFERENCE URGES PROCUREMENT OF EARLY RICE SEED

Hangzhou ZHEJIANG RIBAO in Chinese 21 Aug 80 p 1

[Article by Lu Shouchang [7120 7445 2490], Baochuang Commune]

[Text] In view of the continually overcast and rainy weather and some molding of paddy rice, every echelon of leadership should give a high degree of attention to and take effective action in the selection, retention and care of fine seeds from the early crop of rice.

The Provincial Agricultural Department and Grain Department recently convened an urgent conference on seed work to make arrangements for the performance of these tasks in each jurisdiction. The conference emphasized self-reliance in every locale in the selection and retention of sufficient amounts of early rice crop seeds. Places not so hard hit by calamity should purchase some superior seeds to make up for any shortages. Departments concerned should actively procure and organize timely inspections to do a good job of exchange tasks.

In order to encourage communes, production brigades, and state farms to sell more superior and reserve seeds to the state, the conference also studied and adopted suitable economic measures to increase award sale standards for chemical fertilizer.

Baochuang Commune in Yin County has given active support to fraternal communes and production brigades that have endured calamities, providing 110,000 jin of superior seeds from the early rice crop to Panhuo Commune. As a result of this year's damage from bacterial blight, Panhuo Commune's seeds for next year's early crop was a problem, and comrades in charge at the commune requested help with 110,000 jin of superior seeds from the Baochuang Commune. The Baochuang Commune immediately designated the Hengshan and Tongqiao production teams and the commune seed brigade responsible for selecting and retaining Luai No 4 seeds for the Panhuo Commune. After the cadres and commune members of these three brigades had accepted the task, they organized special units and special personnel for harvesting and drying, and they stored the seeds separately, taking good care of them to make a contribution to their fraternal commune and brigades' quest for a bumper early rice crop next year.

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HEAVY RAINS CAUSE SERIOUS FLOODING IN JIAXING

Hangzhou ZHEJIANG RIBAO in Chinese 20 Aug 80 p 1

[Article by Shao Chang [6730 2512] and Zhang Yongchang [1728 3057 7022]

[Text] Torrential rains have fallen in Jiaxing Prefecture for several days in a row. At 11 of 14 major hydrological stations, the water level has risen above the alert line, and the water level of Tai Lake is 0.12 meters above the alert line. Statistics from the seven counties of Jiaxing, Wuxing, Deqing, Changxing, Tongxiang, and Haining show a waterlogged area of 2.015 million mu. The just planted late rice crop is afloat, and lodging of plants is quite serious. Fifteen communes in Jiashan County have river water covering their fields.

The Jiaxing Prefectural CCP Committee and the prefectural administrative offices have called upon the people of the entire prefecture for urgent mobilization to overcome the flooding and waterlogging, and to care for the late rice crop. Prefectural and county leaders concerned have hurriedly gone to the front lines to direct combat against the disaster. Jiaxing County has closed 400 sluice gates, and erected 100 earthen embankments. A total of 693 electrically operated drainage and irrigation machine stations and more than 200 pumping machines have gone into operation at once. More than 10,000 commune members are working shifts night and day to effect drainage. Materials departments in Jiaxing County have also rapidly organized forces, moving 120 tons of diesel fuel, 4100 pieces of mao bamboo, and 28 cubic meters of timber for use in combating the disaster to the flooded areas and to threatened embankment work sites. Electricity supply departments have given priority to the supply of electricity for draining of water. As of yesterday, water had been pumped from more than 200,000 mu of farmlands in this county. In both Wuxing and Deqing counties as well, active efforts are also underway to rid fields of accumulated water and intensify care over the late rice crop.

Even while the broad masses of cadres and commune members in Jiaxing County are devoting all their efforts to combating disaster and draining the water, they have stimulated the masses to adopt urgent measures to save the paddy rice from heating up and the possibility of molding, in an effort to reduce the damage to the absolute minimum. The 15 drying machines belonging to the country grain department had already dried 15.12 million jin of paddy rice as of 17 August. Thirty communes have already taken 35 million jin of paddy rice to the homes of commune members to be used for consumption by commune members and for animal feed. In various places 21 cocoon stations as well as cement plants, the underground flues in silkworm sheds, and iron stoves have been used for the direct drying of more than 4 million jin of paddy. Materials, grain and electric power departments have also actively joined in the combat against disaster to protect the grain. They have rapidly allocated 400 tons of coal, 200 tons of coal briquets, and 250,000 jin of rice hulls for use in drying the paddy rice.

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AID GIVEN FOR LIVESTOCK PRODUCTION IN MOUNTAINOUS COUNTIES

Hangzhou ZHEJIANG RIBAO in Chinese 26 Aug 80 p 1

[Article by Wang Yichun [3769 5902 5028]]

[Text] The Provincial CCP Committee and the Provincial People's Government have taken effective action to use capital, materials, and technology for the active support of 25 mountain area counties in developing their herbivorous livestock production. As of the end of June, these 25 counties had 420,000 head of beef cattle, 500,000 head of sheep, and 2.76 million rabbits for an increase over the same period last year of 2.26 percent, 15.3 percent, and 40.8 percent respectively.

A survey by departments concerned showed that there are 11.67 million mu of grassy slopes on mountains in the wilds of these 25 counties, and there is an additional large amount of forest grass. Pasture grasses are abundant for the development of beef, sheep, and rabbit production. Acting in accordance with the spirit of two documents from the Central Committee on the development of agriculture, the Provincial CCP Committee last year decided to adopt methods to local conditions for the development of the mountain region economy, giving active support in capital, materials, grain, livestock breeding, and technology to the mountain regions for the development of herbivorous livestock production. In support of communes lacking capital, the Provincial People's Government allocated 3 million yuan to help mountain areas start up collective livestock farms. They allocated another 1 million yuan of public funds to help 16 mountain counties set up commodity beef bases. In Chunan, Tiantai, and Wencheng counties, provincial agricultural units also set up and operated slaughter beef breeding farms, bull breeding stations, and sheep breeding stations for the breeding of superior varieties for the supply of mountain communes and brigades with superior breeding stock.

Last year the Provincial People's Government also issued a proclamation on the raising of beef cattle, which effectively protected the rights of commune members to raise cattle and encouraged the breeding of heifers. As a result of the former destruction caused by the ultra-leftist line of the "gang of four," the families of commune members in many places were not permitted to raise cows or sheep. Now, acting in accordance with government policies, communes and brigades in many mountain areas have permitted commune members themselves to decide which kinds of livestock to raise and how many to raise without any restrictions.

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SUMMER COCOON HARVEST--After spring cocoon production in the silkworm areas of Zhejiang Province reached the highest levels recorded for spring cocoons since Liberation, a bumper crop of summer cocoons was also harvested to create a new record. Following this year's bumper harvest of spring cocoons, the broad masses in silkworm areas increased the raising of summer cocoons, their enthusiasm for the raising of summer cocoons being very high. Ever since the beginning of summer, all places have used every manner of means to overcome the difficulties posed by large amounts of rainfall, which has caused the mulberry groves to run to weeds and produced serious insect pest infestations. More than 230,000 mulberry leaves have been gathered throughout the province as food for the summer crop of silkworms, an increase of 48,000 leaves. This year there has been a universally balanced high output of summer cocoons. Output of summer cocoons throughout the province has amounted to 152,000 dan, a 28 percent increase over the same period last year. Total output of summer cocoons, per unit yields of cocoons, and the quantity of state purchases of cocoons have all created new records. The quantity of state purchases of spring and summer cocoons provincewide increased by 103,000 dan over the same period last year, for fulfillment of 70 percent of annual state purchase quotas. Despite impairment from inclement weather, the 320,000 early autumn silkworms in the province are currently growing quite well, and most of them have entered the vigorous stage. In late August, their cocoons can be taken and offered for sale. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 23 Aug 80 p 1] 9432

LOCAL SUPPLY, MARKETING COMPANIES--A total of 80,810 commune and brigade enterprises have been developed in Zhejiang Province. They have relied principally on the regulation of the marketplace for the acquisition of materials and the disposal of products rather than on the state plan. In order to help commune and production brigade enterprises with their supply and marketing, regional industrial companies began to be set up rapidly everywhere beginning in March. They frequently conduct analyses of the market situation, and some even set up market information stations in the cities to act as advisors to commune and production brigade enterprises. As of the end of July this year, more than 75 regional industrial supply and marketing companies had been set up in Zhejiang Province to play an active role as a channel of supply and marketing for commune and production brigade enterprises. During the first 6 months of this year, they collected 70,450 tons of artificial fibers, plastic manufactures, and metals, and have sold large amounts of products. A sum of more than 144 million yuan has been involved in these supply and marketing activities, giving vigorous impetus to the development of production by commune and brigade enterprises. Currently, each company is establishing cooperative supply and marketing relationships with all 28 provinces in the country. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 12 Aug 80 p 2] 9432

ROAD TO MODERNIZATION--Commune and production brigade enterprises in Zhejiang Province have grown quite rapidly during the past several years. Their output value now amounts to one-third that of the three-tiered economy of people's communes throughout the province. In 1978, output value of these enterprises amounted to 2.63 billion yuan of which wages returned to the brigades amounted to more than 305 million yuan, for an average of 11 yuan per commune member. They provided capital for the construction of agriculture in the amount of 125 million yuan, the equivalent of state capital investment in the building of Zhejiang's agriculture for that year. They also paid 138 million yuan in taxes to the state. In 1979, output value of commune and brigade enterprises amounted to 3.12 billion yuan, or 40 percent of the total output value of the three-tiered commune economy. Experience has demonstrated that taking the road of comprehensive agricultural, industrial, and commercial operations has promoted the overall development of production in agriculture, forestry, livestock raising, sideline occupations, and the fishing industry, and has hastened progress toward the modernization of agriculture. It has made the collective and commune members become wealthy with all possible speed. Commune members profoundly realize that, "to get rich requires agriculture, industry and sideline occupations." This is the only road to go. [Excerpts] [Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 4, 5 Apr 80 p 10] 9432

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[ACTA BOTANICA SINICA will be issued bimonthly from 1981 on. It will publish original papers involving plant cytology, plant morphology, plant physiology, plant biochemistry, plant genetics, phytochemistry, phytoecology, geobotany, paleophytology and plant introduction and acclimatization.]

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AUTHOR: WANG Wenlong [3769 2429 7127]
ZHU Yongda [2612 3057 6671]

ORG: WANG of Luoyang Research Institute of Tractors; ZHU of Henan Agriculture College

TITLE: "Buoying Principle of Tractors and Its Applications"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 1-9

TEXT OF ENGLISH ABSTRACT: This paper deals with the buoying principle of farm tractors working on supersaturated very soft soil. The main points are as follows:
1. Supporting and driving functions of the tracting mechanism of the general tractor are performed separately by the body of the boat (or sledge) and the driving device so as to avoid the slipping sinkage. In this way the tractor will always float on the surface of the soil.
2. A smooth streamlined body (or a sledge) with a fair support area should be adopted to reduce the ground contact pressure of the tractor to 0.025-0.06 kg/cm^2 and the maximum sinkage would exceed 5 cm even if the tractor is working on

[Continuation of NONGYE JIXIE XUEBAO No 2, 23 Sep 80 pp 1-9]

the softest soil. (Its center of gravity and center of buoyancy when in operation should be as close as possible to the geometric center of the ground contact area, and the front part of the boat should lip up a little to reduce the sliding resistance.)
3. In order to get enough propulsive force from the soil the tractor must be equipped with a driving walking device with greater shearing area. It is desirable to make the device go into and out of the soil vertically. Only in this way can bhe tractor fully make use of the soil strength and its resistance can be reduced to a minimum.
4. According to the working conditions, the relative place between the supporting walking device and the driving walking device can be controlled automatically so that the tractor has minimum motion resistance while it develops the tractive force it needs so as to obtain a higher tractive efficiency.

Boat-tractors (paddy field boats), based on the Buoying Principle, have been widely applied in the paddy fields where the orthodox tractor either cannot work or works with less efficiency.

AUTHOR: XU Ting [1776 2185]

ORG: Jilin University of Technology

TITLE: "Some Theoretical Analysis Concerning the Power Transmission of Tractors with Four-Wheel Drive"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 10-16

TEXT OF ENGLISH ABSTRACT: Due to the development of tractors with four-wheel drive, there arises the necessity of studying some theory about the features of power transmission in order to design this type of tractor correctly and use it properly.

Starting from the most fundamental display of the inharmonious motion of the front and rear wheels of the common tractor with four-wheel drive, the difference of skid and slip values, this article analyzes in detail the theoretical principles guiding the process of its design and usage, and some proposals have been put forward. At the same time, on articulated tractors, it should be noted that the selection of the position of the articulated point will have influence on the linearity of the driving of the tractor and the features of the power transmission in the steering process.

AUTHOR: WANG Jiandong [3769 1696 2639]

ORG: Zhejiang Agriculture University

TITLE: "A New Method Referring to the Imitation of a Tractor Load Curve by Means of Periodical Function in Square Waves"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 17-24

TEXT OF ENGLISH ABSTRACT: A new method is presented here imitating the load curve by means of periodical function in square waves. To date, the Fourier series is used popularly in approximating a certain curve so as to imitate it. It used to be realized by electronic circuit, but this is inconvenient due to its sine curve. Along with the development of electronic technology and integrated circuits, it is very simple to produce a set of square waves. Therefore, the mathematical analyzing method is used to discuss the imitation of curves by means of the periodical function in square waves, and the conversion between the square waves function and the sine function is dealt with as well. In addition, a practical curve is analyzed as an example, and a set of amplitudes of square waves is also calculated. A new curve is formed with these functions and has been compared with the original curve. Finally, an ALGOL-60 process is

[Continuation of NONGYE JIXIE XUEBAO No 2, 23 Sep 80 pp 17-24]

shown which is suitable for the operation by computers. It should be pointed out that this is a new method regarding approximation of curves in general application. It can be used in various cases in addition to load curves.

AUTHOR: CHEN Ruyan [7115 3067 1693]
DING Chengjie [0002 2052 2638]

ORG: Both of the Beijing Institute of Agricultural Mechanization

TITLE: "Obliquely Placed Clutch Springs--Theoretical Analysis of Working Characteristics and Design Procedure"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 25-38

TEXT OF ENGLISH ABSTRACT: In this paper, requirements and an ideal case concerning the working characteristics of the clutch spring are studied. Emphasis is placed on obliquely placed clutch springs: theoretical analysis of working characteristics, method of constructing the characteristic curves and analysis of all influencing parameters. Selection of design parameters and design procedure of obliquely placed clutch springs are also stated with examples.

AUTHOR: ZHANG Xuqing [4545 2485 3237]

ORG: Research Institute of Agricultural Machinery in Anhui

TITLE: "The Geometrical Characteristic Equations of Meridional Plane Channel of Pumps and Their Numerical Solutions"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 39-50

TEXT OF ENGLISH ABSTRACT: In this paper, the equations which relate the impeller's passage areas to the geometrical data of the sideline of meridional plane channel are established by way of mathematical analytics. The methods which solve these equations under different conditions are indicated also. The analytical method in this paper is more exact than the usual graphic method. It can avoid the tedious process of graph and check, and can solve two kinds of problems--normal or converse propositions. These calculations and solutions are all numerical. Their values are more exact than those which are obtained from the usual method. Three examples are given for reference in this paper.

AUTHOR: YUAN Xiuwen [5913 4423 2429]
YUE Wenfa [1471 2429 3127]

ORG: Both of the Chinese Academy of Agricultural Mechanization Sciences

TITLE: "Experimental Investigation of Hydraulic Model of Centrifugal Submersible Pump"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 51-60

TEXT OF ENGLISH ABSTRACT: The paper describes the regularity of the effect of the impeller inlet and exit parameters and of the form of diffusion casing on the pump characteristic and efficiency. This regularity was initially obtained by means of the hydraulic model experimental investigation. In order to improve the efficiency of the submersible pump, we may adopt measures to contract the inlet diameter De, to increase the setting angle of the blade and to extend the blade to the inlet edge so that the characteristic requirement can be fulfilled. This paper recommends inlet velocity coefficient ko in the region of 3.7~4.1, the blade angle of attack 8°~15°. The form of the inlet edge between the two vanes should be square so that better hydraulic characteristics are obtained.

Since the energy exchange in the diffusion casing was not so reasonable, the

[Continuation of NONGYE JIXIE XUEBAO No 2, 23 Sep 80 pp 51-60]

authors think that the formula for calculating the outer diameter De of the centrifugal pump impeller must be revised theoretically so that the characteristic requirement can be reached. This paper recommends a velocity coefficient under several specific speeds n_s. The relationship between the throat area F_3 of diffusion casing and impeller exit area F_2 is one of the important factors determining the characteristics of the submersible pump. This paper recommends F_3/F_2 in the region of 0.7~1. There is no oscillation or noise no matter whether the number of vanes in the diffusion casing and impeller is the same or not.

AUTHOR: XU Naizhang [6079 0035 4545]

ORG: Zhejiang Agriculture University

TITLE: "Theoretical Analysis of Rake Finger of Stalk Lifter and Rake Star-Wheel"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 61-75

TEXT OF ENGLISH ABSTRACT: Based on the analysis of the relation between kinematical of rake finger and crops, two fundamental equations are derived. According to these equations, this paper discusses and suggests three parameters. The rake finger is opened up at $\varphi = 80^\circ \sim \pi/2$ to reduce K (ratio between kinematical velocity of rake finger and forward velocity of semi-feed combine). θ (inclination of the stalk lifter) in a range from 60-65° and K from 1.44 to 3.51 can adapt better to the harvesting of wheat and dwarf rice.

The estimate formulae of radius (r) and circular velocity (V_{OS}) of the rake star-wheel, $r \geq 1/3(B - \Delta S)$ and $V_{OS} = \frac{r\pi}{r + S} V_m$, are derived. The position of the rake star-wheel is also discussed.

AUTHOR: MA Ji [7456 7535]
MAO Guolun [3029 0948 0243]

ORG: Both of the Chinese Academy of Agricultural Mechanization Sciences

TITLE: "Research and Test of Large Cutting Width Vertical Type Reaper with Star Wheel Lifter"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 76-86

TEXT OF ENGLISH ABSTRACT: In order to improve the operating function of the vertical type reaper, the phenomenon and its principle of crop cutting and transferring sideways on the reaper has been studied. The forces acting on crop transfer are analyzed from the viewpoint of kinetics. Thus we can find the way to increase the stability of transferring a crop in a vertical standing condition. The star wheel lifter is a more effective method and yet very simple of those developed between 1973 and 1976.

The vertical type reaper, if adopting this star wheel lifter, may improve its characteristics in many respects, such as avoiding the crop falling down at the front of the reaper when cutting the field end, broadening the limitations of

[Continuation of NONGYE JIXIE XUEBAO No 2, 23 Sep 80 pp 76-86]

the cutting width as well as traveling speed, hence the field output of the modified vertical type reaper can be greatly increased. The feasibility for bad field conditions, such as harvesting light lodging crops, etc., is also improved.

AUTHOR: JIN Chenglie [6855 2110 3525]
LIU Guanghai [0491 1684 3189]

ORG: Both of the Chinese Academy of Agricultural Mechanization Sciences

TITLE: "Testing Analysis of Threshing and Cleaning Apparatuses of Head Feeding Combine"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 87-98

TEXT OF ENGLISH ABSTRACT: Three models of head feeding combines were tested at Jiangxi, Guangdong and Beijing last year. This paper analyzes the testing results mainly of the threshing cleaning parts and discusses the construction of the parts concerned, with the purpose of finding key points for increasing the capacity of this type of combine.

In this paper the most important point is to analyze machine HD3100GT and to compare it with Minjiang-150 and H3000G.

AUTHOR: GAO Erguang [7559 3643 0342]

ORG: Chinese Academy of Agricultural Mechanization Sciences

TITLE: "The Tests and Analyses of Imported Plow for Big-Power Tractors"

SOURCE: Beijing NONGYE JIXIE XUEBAO [TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 2, 23 Sep 80 pp 99-113

TEXT OF ENGLISH ABSTRACT: The trends toward greater width, higher speed and higher efficiency have been seen from the tests and structural analyses of some imported plows for big-power tractors. There is also some new progress in plow design parameters, product construction, materials and manufacturing technology.

In addition, this paper has also made a comprehensive analysis on the test results, design parameters and structural characteristics of some imported plows for big-power tractors.

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PROBLEMS IN AGRICULTURAL CONTRACT SYSTEM TO BE IRONED OUT

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 8, 5 Aug 80 pp 6-7

[Article: "Action Should Be Taken on the Signing of Agricultural Contracts Before Fall Planting"]

[Text] Following a briefing on experiences in experimental production, purchase, supply and marketing contract systems in Jin County, Hebei Province, that was delivered in January this year to the All-China Rural Commune Administration and Management Conference and the All-China Agriculture and Livestock Bureau Chiefs Conference, the serious attention of party and government leadership organizations everywhere and of agricultural and financial and trade units was further aroused. It is understood that during 1980, in addition to the extension of the system on a trial basis to more than 40 counties in Hebei Province, test sites were established in counties located in provinces, municipalities, and autonomous regions, including Jiangsu, Fujian, Anhui, Hubei, Hunan, Sichuan, Yunnan, Guizhou, Tibet, Shaanxi, Gansu, Shanxi, Liaoning, and Beijing. The experience at test sites everywhere once again demonstrates that the direct signing of contracts between units of state enterprises and accounting units of people's communes in rural villages that combine production, state procurement, supply, and marketing to bring into line the state plan and the normal channels for market regulation will provide numerous advantages, promoting the growth of agricultural production and consolidating the collective economy, as well as improving the administration and management of financial and trade units to assure that supply equals demand for both the state and the marketplace. These contracts are truly a great reform in the method of economic management, and they should be given full approval and be actively and steadily promoted.

Consideration is currently being given high and low to the formulation of the 1981 agricultural production plan, and preparations are currently underway for the fall sowing of wheat. On the basis of the requirements of the objective laws governing agricultural production and trial experiences with the contract system, all places planning to continue or to begin trials of the agricultural contract system next year should act early and strive to complete this matter before fall sowing, so that grassroots production units in rural villages and the state departments concerned can make early preparations to act in good time. Conclusion of agricultural contracts for 1981 will help production teams "know a year in advance" and will help commune members deal promptly with the various measures in "1 year's crops take 2 years' work," so that everything will be in place and the farming season will not be missed.

In view of the situation this year in the trial promotion of the agricultural contract system, there are some problems requiring attention in organizing the signing of 1981 contracts, as follows:

The first is to be adept at integrating the state plan with respect for the autonomy of communes and brigades, guiding and promoting the overall growth of agricultural production, and vigorously increasing the commodity rate. The situation at test sites everywhere has demonstrated that extension of the agricultural contract system is, in fact, an improvement over the existing planned management system in agriculture. Its greatest advantage is that it changes the former sole reliance on administrative commands from above, with its rigid allocation of planting plans and output quotas, adopting instead the method of discussion between procurement units and communes and brigades to determine production, procurement, supply, and marketing plans. In this way the administrative autonomy of communes and brigades is respected, the collective economy is benefited by being able to adapt methods to local situations to exploit advantages, strong points may be used to advantage while weak points are downplayed, and overall commodity production gorws. Additionally, completion of state plans for the procurment of agricultural and sideline products is placed on the positively reliable foundation of seeking truth from facts. This requires that grade 1 party and government leadership organizations in counties organize planning commissions and agricultural, finance, and trade units in order to conduct a close investigation and study of the needs of both the state and the marketplace, as well as of the actual situation and requirements in communes and brigades, so as to be able to combine well the needs of the state and of the marketplace with the exploitation of natural and economic advantages by individual communes and brigades. The best way of doing things is for county leadership organizations, acting on the basis of monopoly purchase plans for agricultural byproducts, and on the basis of assigned procurement tasks and procurement plans for the products of commune and brigade industries, to propose to each commune and brigade the formulation of guidelines and suggestions for consideration for next year's plan, relating them to pertinent circumstances, after which each commune and brigade should be urged to propose the products that the state should purchase or act as an agent in marketing, plus the means of production the state should be required to provide. Using this as a basis, and in a conference-like setting, following full discussion, the authorities from the state should again conclude contracts with the communes and brigades. In this way, the upper and the lower levels will be teamed, there will be discussion back and forth, and plans will be reliable, realistic, and easy to implement.

Secondly, real consideration has to be given to the welfare of the state, the collective, and the individual, with full arousal of the peasants' enthusiasm for the rapid development of agriculture. The process of organizing the signing of agricultural contracts is by no means the simple operation of an economic procedure; it is a process for the concrete implementation of the party's individual economic policies for the rapid development of agriculture. For this purpose, it is necessary to follow the guiding principles of the Central Committee for the liberation of thinking, the relaxation of policies, and the enlivening of the economy and, in combination with specific local situations, and following diligent investigation, study, and discussion with the masses, to conduct real reforms in a measured way and carry out new economic policies in order to arouse the enthusiasm of the peasants. For example, in some counties with a commodity grain base, the proportion of requisition purchases of grain and excess purchases of increased output have long ex-

caused the proportion of increases in grain output, with too small an amount of grain being retained by the communes, brigades, and peasants. As a result, in brigades where management has been good and high output produced, excess purchase quotas have become increasingly severe, while the state has had to resell grain to the more poorly managed brigades with low output. This kind of lashing of a fast ox and imposition of levies on excess grain must definitely be changed in order to encourage the frontrunners to produce higher output and the laggards to catch up, for an overall stimulation of enthusiasm in all categories of communes and brigades for the increased production of grain. Additionally, if there is to be development of economic crops such as cotton, oil crops, and sugar, the burden of requisition purchases of grain by the state must be appropriately reduced in those areas where the growing of such crops is concentrated, and proper increases must be made in standards for grain consumption by commune members, with various policies for the issuance of rewards being put in place. As for the development of areas in which forestry, livestock raising, and fisheries are dominant, the adoption of special, flexible policies will be necessary to differentiate them from the usual agricultural areas. Such policies might be the readjustment of requisition purchase quotas for grain and the institution of requisition purchase equivalents of grain, in order to encourage the development of the livestock and fishing industries. In short, emphasis in the past has been on greater contributions to the state and on fulfillment by every possible means of assured profits for state enterprises in purchase and marketing policies, without giving sufficient attention to the means by which communes, brigades, and peasants could augment their incomes and accumulate capital. This erroneous tendency must be earnestly corrected. Experiences everywhere with the trial application of the contract system have demonstrated that when all parties work together as one in active support of it, collective production by communes and brigades grows, the peasants gradually become wealthy, the market economy comes alive, fulfillment of state purchase plans or overfulfillment of these plans can be assured, and profits of state-owned financial and trade units increase. This great balance sheet must be squared. During this period of readjustment, in particular, in order to arouse the enthusiasm of the peasants for all-out development of agriculture, lightening the peasants' load and increasing the peasants' income are policies that must be implemented with a vengeance and be realized through the conclusion of contracts.

Third, there must be a system of economic proficiency rewards and punishments for cadres in order to arouse the enthusiasm of cadres in communes, production brigades, and fiscal and trade units, and in order to assure that contracts will be honored. In the trials of the agricultural contract system, both commune and brigade cadres and fiscal and trade departments were concerned lest contracts not be honored, become simply a form, and amount to nothing more than empty phrases. This is a perniciousness born of many years of empty talk and loud boasting, and it is also a difficulty occasioned by objective conditions in production, supply, and marketing. But only if the contract that is signed approximates objective reality, and only if economic actions are taken to encourage both parties to the contract to bring their subjective activity into full play, can the difficulties mentioned above be solved. The economic measures mentioned here, looked at in terms of the experiences in Jin County in Hebei and Anze in Shanxi, require that a system of rewards and punishments based on economic proficiency be instituted for managerial cadres in commune and production brigades, as well as in units of state-owned enterprises, in order to link in a material way the welfare of the state and the welfare of individuals, to enhance the sense of responsibility, and to arouse enthusiasm. Naturally, a determination of the items to be assessed and the criteria to be used must be carried out

by seeking truth through facts and by allowing some leeway. In the handing out of rewards and punishments, one must consider changes in the actual situation during the course of carrying out the contract, distinguishing between artificial subjective reasons (i.e., accidents arising from negligence), and natural calamities or other objective reasons that could not be helped. The circumstances must be inquired into before punishments are given. Additionally, it is necessary to have a corresponding supervisory organization responsible for checking, supervising and urging along, and for arbitrating in case of disputes or changed circumstances. Ideological and political work must also be reinforced at the same time, so that everybody will consciously carry out contracts and really uphold the prestige and solemnity of the contracts.

The fourth is to maintain the style of seeking truth from facts and discussions on the basis of equality. A problem exists in changing the workstyle and the ways of doing business on the part of leadership comrades in pertinent state departments and among leadership comrades in counties and communes. In view of the situation in some testsite counties, the main problem appears to be the maintenance of seeking of truth through facts and discussions on the basis of equality. Inasmuch as parties A and B will sign a contract that has ramifications for the economic welfare of both sides for a year, the welfare of each side represented must be considered equal. This differs from sending plans down from higher leadership authority, and the distribution of tasks is not the same. It is not a relationship in which the lower level submits to the authority of the higher level. Therefore, the method of conducting discussions on an equal footing must be adopted, with both sides reaching a unanimity of views and with no side being able to coerce the other into anything. To achieve true voluntary mutual benefit, both sides should be allowed to take into consideration their own subjective conditions and economic welfare. This is an objective law inherent in the promotion of the contract system itself, and no one may contravene it. If they do, the contract system will become a dead letter.

The promotion of the agricultural contract system is a new task. In addition to the readjustment and consolidation going on at this time in the structure, system of organization, and policies of the agricultural economy, this means that CCP committees in every county positively must strengthen leadership, discover problems, solve them in a timely fashion, and permit this new thing called the agricultural contract system to play a greater role in 1981.

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CSO: 4007

ROLE OF RADIOACTIVE BREEDING DISCUSSED

Hong Kong ZHONGGUO XINWEN in Chinese 5 Sep 80 p 8

[Article: Chinese Atomic Radioactive Breeding Plays a Major Role in Agricultural Output]

[Text] In China, the use of atomic radioactive breeding has found broad application in farm crops, sericulture, orchards, vegetables, aquatic products, tropical crops, and micro-organisms, with 145 new varieties being put into production.

Use of seeds bred by irradiation methods, to achieve full realization of the superior characteristics of high output, early maturation, resistance, and quality has aroused increasing attention. In 1980, the area over which the cultivation of irradiated breeding had been extended nationwide amounted to more than 70 million mu, an increase of 20 million mu over 1979.

"Yuanfengzao" superior rice variety, which was bred by the Zhejiang Provincial Agricultural Academy and promoted for planting in 1974, last year produced an increase of 800 million jin in grain output. This variety ripens 45 days earlier than the original variety and is of great significance in increasing the multiple cropping index and avoiding early frost damage in the middle and lower reaches of the Changjiang. Additionally, its lysine content is quite high and its quality good. It has been well accepted by the people. The area to which this variety has been expanded this year amounts to 13.2 million mu. The corn hybrid "Luyuandan No 4" and the cotton hybrid "Lumian No 1," bred by the Shandong Provincial Agricultural Academy, have been extended to cultivation this year in numerous provinces and municipalities. "Lufengdan No 4" hybrid corn has a protein content of 11.3 percent. Sown in summer, its growth period is only about 80 days, and its yields are usually from 900 to 1,900 jin per mu, with the highest being 1,200 jin. In 1977 and 1978, "Lumian No 1" hubrid cotton took first place in output in regional experiments with cotton varieties conducted in the Huanghe basin; output averaged 36.3 percent greater than other varieties compared.

Radioactive breeding employs atomic energy radiation to induce genetic changes in plants artificially, after which selections are made from a large quantity of variable materials to breed new varieties. As compared with the meager natural mutations, artificially induced changes have a rather high mutation rate, generally considered to be from 100 to 1,000 times greater than the natural mutation rate. The successes achieved in China during the past 30 years in the use of radiation methods to breed new varieties could hardly have been achieved through long years of natural selection.

There are numerous varieties of crops in which radiation brings about genetic mutations. Some new types are strange and fantastic, as yet unseen in the natural world. Aside from the new varieties promoted for cultivation, some mutant lines or mutant individual plants with one or two outstanding characteristics, good characteristics in general, are also selected as new achievements meriting serious attention. Some of these are early-maturing types that mature from 35 to 40 days earlier than usual; or large-panicle types in which there may be as many as 178 grains per panicle, or large-grain types for which the per thousand weight of the grains is 66 grams, or superior-quality types with high protein and lysine content. There are also rice lines that are resistant to numerous diseases, or mutant wheat plants from which the protein content of wheat is 24 percent higher. There are mutant pears that are able to withstand temperatures of -35° C and still grow normally, and tomatoes of low acidity but with high vitamin C content, and so on.

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BRIEFS

SUMMER GRAIN PROCUREMENT--According to statstics from the Ministry of Grain, nationwide state summer grain procurement plans have been overfulfilled. As of 10 August, the amount of summer grain procured and put into storage totaled more than 18.1 billion jin, for a 110.9-percent overfulfillment of plan. In view of the large number of places in which calamities reduced the wheat output this year, every place emphasized the correct handling of the relationship among the state, the collective, and the individual as part of state procurement, thereby achieving an improvement in the lives of the peasants, development of the collective economy, and consideration of the needs of the state. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 16 Aug 80 p 1] 9432

WHITE ANTS TRAP--Beijing, Nov. 1: Scientists of Sichuan University, Sichuan Forestry Institute and Sichuan's two white ant research institutes have synthesized a hormone which can be used to trap white ants. Ants cause great damage to buildings, forests and farm crops. After long research into the habits of ants, the scientists found that the ants will group into communities under the influence a hormone exuded by the ants themselves. [as published] With artificial hormone, the scientists can now induce white ants to gather in specially made traps and get killed.--A.P.P. [Text] [Peshawar KHYBER MAIL in English 2 Nov 80 p 4]

CSO: 4020

RURAL AREAS NEED STABLE POLICIES, STRONG LEADERSHIP

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 9, 5 Sep 80 pp 2-3

[Article by Zhang Jinfu [1728 0513 1133], first secretary of the Anhui Provincial CCP Committee: "Determine To Consolidate the Collective Economy and Bring Into Play the Enthusiasm of Commune Members"]

[Text] Editor's Note: During July and August, Comrade Zhang Jinfu, first secretary of the Anhui Provincial CCP Committee, traveled to various places throughout the province to inform himself about agricultural production and about the situation with regard to flood prevention and the struggle against calamities, as well as to go to a disaster area to offer sympathy and solicitude to disaster victims. Wherever he went, he held discussions with numerous grassroots-level cadres and commune members. The present article was prepared by Comrade Gong Nanjie [7895 0589 2638] of the Anhui Provincial CCP Committee office from notes taken on Comrade Zhang Jinfu's conversations at various places. Comrade Zhang Jinfu personally agreed to its special publication in this magazine.

When many cadres and commune members reflect on the situation in agriculture 30 years ago, they generally cherish the period from land reform to the elementary agricultural producers' cooperatives and the period of correction of the "three highs" [high salaries, high royalties and high rewards], and the "five styles" [tendencies to effect the transition to communism prematurely, to exaggerate, to order people about arbitrarily, to rely on commandism and to behave like privileged persons], plus the institution of the "eight character" policy. During those two periods, agricultural production rose year after year and the lives of the farmers improved with each passing day. Everyone feels that government policies at that time were on the right track and in accordance with the desires of the people, that the masses were at a high pitch of enthusiasm, and that the cadres' workstyle was quite good. Following the overthrow of the "gang of four," and particularly following the solution of the Anhui Provincial CCP Committee leadership problem, the Central Committee issued two articles on agriculture, and the Provincial CCP Committee adopted six courses of action,

which enjoyed great popular support. With the yearly turn for the better in agriculture, this was another time of flourishing and increase in agriculture, with the agricultural situation becoming better and better. Now, the general desire both of the cadres and of the commune members is for a stabilization of policies. If only there is stabilization, then with hard work over a number of years, agriculture will definitely have great expectations. Fear of policy changes is an issue of universal apprehension; stabilization of policies is universally a fervent hope. Some say, we have been jerked around enough. We hope that no matter what happens, we will not be jerked around again.

The agricultural policy that is currently discussed more than any other is the issue of contracts with individual households to guarantee output. Largely as a result of the effects of propaganda in periodicals, which differs from what the cadres say, the thinking of some grassroots-level cadres and of the masses has been thrown into confusion. Everyone fervently hopes for a single clear-cut statement in order to stabilize the system of responsibility. Unless this occurs, new instability may ensue at the time of autumn harvesting and replanting. In January this year, the Provincial CCP Committee Agricultural Conference agreed that in those places in straitened circumstances and backward for a long period, contracts with individual households to guarantee output could be instituted. It pointed out at the same time, however, that this was a stopgap measure adopted under special circumstances. Mostly it applied to places that depended on resale by the state to them for their grain, where life depended on welfare, and where production had not risen for long periods. It was also emphasized that this measure could not be applied throughout the province in a blanket manner, but rather should be guided by the adaptation of methods to local situations. In places where production has developed and the collective economy has prospered, there is no need for advocacy of contracts with individual households to insure production. For every system of responsibility the emphasis should be on summarization and perfection from a stable base. Comrades who attended the conference all praised the spirit of the Provincial CCP Committee. Nevertheless, following the conference, perceptions varied, and now they actually far surpass the original scope of the Provincial CCP Committee's decision. Right now happens to be the great busy season of rush harvesting, rush planting, prevention of flooding, and draining of waterlogging. In accordance with the spirit of the directive of Central Committee leadership comrades, there has to be a resolute standing firm--just this and no further enlargement. In actual fact, now that contracts with individual households to guarantee output are in effect in many places, the enthusiasm of commune members for individual management has increased, and output has increased to varying degrees as well. But this has posed new problems for the collective economy. The five unifications [unification of leadership, planning, preliminary preparations, operations and checking] cannot unify, and collective property has been split up, with production teams becoming empty shells. The way things are done in many places is "to kick two packages with one foot," which is to say that once a commune member has completed his requisition purchase quotas for the production team and has kept back his portion, all income becomes the property of the individual commune member, and it becomes very difficult to achieve delivery of goods or a unified accounting or unified distribution. A small number of places have dispatched workteams to enhance

leadership, and perhaps the "five unifications" will be achieved this year, but later on is difficult to say. Therefore, the strengthening of leadership is an extremely important issue with regard to households with whom contracts to guarantee output have already been put into effect. There must be a strengthening of ideological education, with a clear stand being taken to make it clear to cadres and the masses that we are determined to consolidate the collective economy and that production teams will, as always, continue to be the main body with unified leadership. It has to be pointed out that the direction henceforth will be specialized contingents, specialized teams, specialized households and specialized work under the team's unified leadership, in which the individual and the collective are linked together. There must be an all-out effort in diversification of operations, an all-out effort in commune and brigade industry and an all-out effort in household sideline occupations. While consolidating the collective economy, full play must be given to the initiative of commune members. Furthermore, within the framework of the operation of the collective economy, full play must be given to small freedoms for commune members. In this way, collective accumulations can be increased, commune members' incomes can be increased, and everyone can walk the road toward wealth together.

As for the size of production teams, it is not advisable that they be too small. When I was making inspections in various places, commune members made very vivid analogies by saying that production teams were like acting in operas. There were various roles such as male character types, female character types, painted faces, and clowns, as well as those in charge of the drums and huqin players. With too few people, the performance would not be very good. It is necessary to adapt methods to local situations and act in a practical way. Chairman Mao said that until agriculture is mechanized, it will not be able to jump 3 feet high. I feel this is in accord with the actual situation. I hope that comrades will do a good job of summarizing experiences and will truly gradually take the lead. They should truly achieve the "five unifications" and the "three guarantees and one premium" [production targets achieved, assigned work done on time and the cost of production met, with any surplus being retained by the production brigades], to make production teams truly be economic entities.

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BRIEFS

ANHUI WHEAT-RICE OUTPUT--Total output of wheat and rice in Funan County of Anhui reached 392.19 million jin this year, or 69.5 percent of the 1980 grain production plan. Due to serious waterlogging in 1979 autumn, some 100 million jin of grain crops were ruined in Funan County. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 6 Nov 80]

ANHUI WHEAT SOWING--Some 10.4 million mu of wheat were planted in Anhui's Fuyang Prefecture as of 5 November, or an increase of 2 million mu over last year. By late September, the prefecture had purcahsed some 150,000 dun of nitrogenous and phosphate fertilizer and accumulated 35 million cart-loads of backyard manure. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 6 Nov 80]

ANHUI GRAIN-OIL PROCUREMENT--As of 5 November, Feixi County, Anhui, had delivered 169.96 million jin of grain and 9.64 million jin of oil to the state, or 0.4 percent and 348 percent respectively more than the annual procurement quota. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 10 Nov 80]

ANHUI COUNTY TOBACCO HARVEST--Beijing, 30 Oct (XINHUA)--Boxian County, Anhui, has reaped bumper harvests of tobacco leaves this year. As of 3 October, the county had already procured 256,000 dan of tobacco leaves, fulfilling the state procurement plan ahead of time. [Beijing XINHUA Domestic Service in Chinese 0136 GMT 30 Oct 80]

ANHUI COUNTY SOWING PLAN--Huoqiu County, Anhui, plans to sow 900,000 mu of wheat and 250,000 mu of rape this year and 210,000 mu of cotton in 1981. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 2 Nov 80]

ANHUI COUNTY GRAIN PROCUREMENT--As of 14 November, cadres and commune members in Tianchang county had sold 90.33 million jin of grain to the state, overfulfilling the county's grain procurement tasks for the year. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 16 Nov 80]

ANHUI COUNTY SILKWORM COCOON--Jinzhai county, Anhui Province, procured 18,100 dan of silkworm cocoons in the first 9 months this year. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 15 Nov 80]

ANHUI COUNTY PEANUT OUTPUT--Quanjiao county, Anhui, has procured 13.3 million jin of peanuts. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 15 Nov 80]

CSO: 4007

BRIEFS

FIVE TEA BASES--Fujian authorities concerned appropriated 3.2 million yuan this year for the construction of five tea base counties: Anqi, Fuan, Fuding, Jianou and Jianyang. According to plans, by 1985 these five counties will each produce 50,000 dan of tea leaves annually. Currently the five counties have more than 150,000 mu of newly opened high quality tea plantations. Last year, output of tea leaves by the five counties totaled more than 56,000 dan, accounting for 45 percent of the total amount of tea leaves produced throughout the province. This year, the five counties have had bumper harvests of both spring and summer tea. As of the end of July, the state had purchased almost 30,000 dan of tea leaves, an increase of more than 10 percent over the same period last year. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 29 Sep 80 p 7] 9432

FUJIAN COUNTY SUGARCANE CROPS--Fuzhou, 28 Oct (XINHUA)--Thanks to the instituting of the system of responsibility in production, the 122,000 mu sugarcane crops in Xianyou County, Fujian, are growing promisingly. [Beijing XINHUA Domestic Service in Chinese 0232 GMT 28 Oct 80]

COASTLINE TREE BELT--Fuzhou, 11 Nov (XINHUA)--A 2,000-kilometer tree belt has just been completed along the coast of Fujian. It took people living along the coast a total of 30 years to build. The shelter belt has made a marked difference to farmers, protecting agricultural land from typhoons and sandstorms and significantly lifting the temperature and humidity on the leeward side. Afforestation in Fujian has enabled communes to convert 66,000 hectares of land previously threatened by sand into stable, fertile fields. Altogether, 29,000 hectares of beaches and wasteland have been put under trees in Fujian. The afforestation program on Pingtan, an offshore island, has had a big impact on local weather patterns, according to meteorologists. They say that over the last 10 years, the air temperature has dropped, there is more rain, evaporation is less, the wind speed over the island is less, and there are fewer gales. Some tree-protected farmland is now producing two crops of rice a year. [Text] [OW121343 Beijing XINHUA in English 0754 GMT 11 Nov 80 OW]

FUJIAN RURAL OUTPUT--Fuzhou, 16 Nov (XINHUA)--Jianyang county, Fujian, increased grain output and income from sideline production this year as compared with last year. In 1979, its income from sideline production reached 8 million yuan, and its grain output increased by more than 20 million jin compared with the 1978 record. [Beijing Xinhua Domestic Service in Chinese 0150 GMT 16 Nov 80]

CSO: 4007

BRIEFS

WUDU PREFECTURE DRAFT ANIMALS—Wudu Prefecture, Gansu, by the end of September had increased its total number of draft animals to 270,000 head more than in 1979. [SK130557 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 9 Nov 80]

ZHANG COUNTY OIL-BEARING CROPS—Zhang County, Gansu Province, expanded oil-bearing crop fields from some 20,000 mu to 40,000 mu this year and enforced the responsibility system in oil-bearing crop production, reaping a bumper harvest. Total oil-bearing seeds output is estimated at 4 million jin, a nearly 400 percent increase over 1979. Average household income from oil-bearing seeds will be some 70 yuan. [SK102034 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 1 Nov 80 SK]

SHANDAN COUNTY GRAIN PRODUCTION—In Shandan County, Gansu Province, the grain acreage is 43,600 mu more than in 1978. Grain output in 1979 was 15 million jin greater than in 1978. In 1980 it has been 16 percent higher than in 1979. Oil-bearing crop acreage has increased from 30,000 mu in 1978 to 56,000 mu in 1980. Output of oil-bearing seeds in 1979 was 150 percent more than in 1978. In 1980 it is 8 million jin, nearly doubling 1979 figures. [Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 9 Nov 80 SK]

C30: 4007

FOSHAN PREFECTURE LEADS COUNTRY IN SILKWORM RAISING

Hong Kong ZHONGGUO XINWEN in Chinese 1 Oct 80 p 4

[Text] Through the promotion of scientific growing of mulberry trees and raising of silkworms, between January and August this year, output of cocoons in Foshan Prefecture, Guangdong Province totaled more than 289,000 dan, for a more than 10-percent increase over the same period last year to occupy first place nationwide in average output of mulberry per mu and in per unit quantities of cocoons.

Foshan Prefecture has a more than 2,000-year history of the growing of mulberry trees and raising silkworms. Currently, every county in the prefecture is engaged in such production. The superior variety of mulberry trees that have been promoted here during the past several years are characterized by early blooming, large leaves, late dropping of leaves and high output. Leaves may be gathered eight or nine times annually to feed eight or nine crops of silkworms for a higher output of coccoons than in Jiangsu, Zhejiang or Sichuan provinces.

Guangdong Province's principal mulberry and cocoon production area, Shunde County, promoted superior variety mulberry trees this year, and from the first five crops of cocoons alone, output has been more than 150,000 dan, for an average cocoon yield of more than 200 jin per mu of mulberry trees, and an average increase of almost 10 percent over the same period last year. Foshan Prefecture has given serious attention to the breeding of superior varieties of silkworms, and to actively caring for the silkworms in a scientific way. Currently, the entire prefecture is promoting "erhauxing" [0059 0553 1840] and "duohuaxing" [1122 0553 1840] new varieties of silkworms, which are suitable for multiple crops annually. The former silkworm varieties have been phased out entirely. With the promotion of scientific methods of raising silkworms has come an increase both in output of cocoons and quality of raw silk. The length of threads of silk from cocoons has increased from the former 300 meters to 800 meters and up.

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BRIEFS

GUANGXI COUNTY GINGKOS HARVEST--Nanning, 4 Nov (XINHUA)--Xingan County, Guangxi, has reaped a bumper harvest of gingkos with a total output of 1.8 million jin, or some 400,000 jin more than last year. The 600 dun exported gingkos have been packed and ready for delivery to Hong Kong, Macao and Southeast Asia. [Beijing XINHUA Domestic Service in Chinese 0128 GMT 4 Nov 80]

CSO: 4007

PUDING COUNTY REAPS BUMPER CORN HARVEST

Guiyang GUIZHOU RIBAO in Chinese 25 Sep 80 p 1

[Text] Puding County has reaped a bumper corn harvest on more than 104,600 mu, for an estimated output of 61.16 million jin, a 29.5 percent increase over last year.

This is the heartening result of the liberalization of agricultural policies. Since winter of last year, Puding County's CCP Committee has taken action on three matters. One was additional delineation of some private plots within the scope permitted by policies, on the basis of the prevailing population. The amount of land run by individual commune members themselves has been increased by about one-half over what it had previously been. Second, was allowing commune members to take charge of 30 percent of the poor land and the rocky land in out-of-the-way places in mountainous and semi-mountainous regions, where there is a lot of land but few fields, with remuneration to be calculated following harvests or through deductions from consumption grain in accordance with the contracting of production. Third was the promotion of various forms of responsibility systems, suiting methods to local situations. This liberalization in agricultural policies aroused the enthusiasm of commune members, causing the appearance this year of "three many and one early" in preparations for farming as compared with last year: much movement of nightsoil accumulated by farm families; much preparation of chemical fertilizer and phosphate fertilizer; much change to superior varieties of corn; and early plowing of vacant and hardened fields. According to statistics, the amount of nightsoil from farm families and the amount of chemical fertilizer used on the fields at planting time this year throughout the province was one-third greater than last year, and change to hybrid corn varieties amounted to more than 50,000 jin. This year the corn was planted early and drooping from drought avoided. In Chengguan, Maguan, Huachu and Machang prefectures, where temperatures tend to be warmer, hybrid corn was actively promoted. These four prefectures planted 11,110 mu of hybrid corn, amounting to one-fourth of the area planted to corn. In field care, three weedings and two applications of fertilizer were made everywhere. Most communes and brigades throughout the county have virtually completed harvesting, and the happy news from everywhere is that in 11 of the 28 communes increased production has been greater than 40 percent; and in one-fourth of the 339 production brigades, output has doubled.

Last year three production teams in the Xiazhai Production Brigade of Longtan Commune harvested only somewhat more than 60,000 jin of corn, but this year they made a sudden increase to more than 130,000 jin.

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XINGYI COUNTY REAPS GOOD CORN HARVEST

Guiyang GUIZHOU RIBAO in Chinese 25 Sep 80 p 1

[Text] This year Xingyi County planted a total of 12,000 mu of Xingyu No 1 corn. Average per unit yields broke 800 jin, counting harvests from experimental sites and from large area plantings.

Xingyu No 1 is a new variety of corn bred by the Xingyi Prefecture Agriculture Institute. It has produced bumper harvests in 3 years of test plantings at dispersed sites at different elevations above sea level, in different climates, and in places with different quality soils. On the basis of harvests from experimental sites and regular harvests during August, Xingyu No 1 has produced from 300 to 400 jin higher yields per mu than conventional corn, with average per unit yields breaking 800 jin. Dingxiao Prefecture planted a total of 6,400 mu of Xingyu No 1 this year, and harvests from 10 test sites covering 70 mu at 4 communes in Dingxiao, Zhengtun and Lutun under fine, medium and poor growing conditions, produced maximum per unit yields at 1,100 jin, and minimum per unit yields of 850 jin of Xingyu No 1. At Wushabazi, which is at an elevation of 1,454 meters, Xingyu No 1 harvests by the Prefecture Agriculture Promotion Station from a 1.3 mu experimental plot had a gross weight of 2,800 jin, which figures out to 1,484 jin net weight, or an average 1,140 jin per mu. At the Xiaojiawan Production Team in Fayu Commune, Pengzuo District, which is more than 1,500 meters above sea level, a 22-mu tract of Xingyu No 1 averaged per unit yields in excess of 800 jin. Because of its strong adaptability and marked successes with increased output, communes, production brigades and households under contract for guaranteed output are actively switching to the planting of this hybrid, preparing to make increases in the area planted to it next year.

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CSO: 4007

BRIEFS

HEBEI COUNTY PEANUT HARVEST--Shijiazhuang, 4 Nov (XINHUA)--Daming County in Hebei Province has harvested a total of 40 million jin peanuts this year, more than double of last year. The county has procured 10 million jin peanuts more than the 11.2 million jin targeted figure required by the state. The county's per capita income from peanuts alone will exceed 40 yuan this year. [Beijing XINHUA Domestic Service in Chinese 0134 GMT 4 Nov 80]

CSO: 4007

BRIEFS

SEED PROCESSING EQUIPMENT--A complete set of seed processing equipment has been installed and put into operation in Hulan County, Heilongjiang Province. This job was assigned by the Ministry of Farm Machinery Bureau, which recently held a technical appraisal meeting at the Hulan County seed processing plant. The equipment, the first of its kind in China, is home-designed and home-produced. This advanced energy-saving, economic process has a daily processing capacity of over 20,000 jin and will save money in processing seeds. [SK132238 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 10 Nov 80]

CSO: 4007

INITIAL RESULTS OF SPRAY, DRIP IRRIGATION TRIALS GIVEN

Beijing GUANGMING RIBAO in Chinese 8 Sep 80 p 2

[Article: "Initial Success in Tests of Spray and Drip Irrigation on 1000 Mu in Henan"]

[Text] Initial success has been realized in tests in Henan Province using spray irrigation on 1000 mu of tobacco, and using movable drip irrigation on 1000 mu of grain crops. Recently, evaluation and approval by all the experts concerned has validated the results of this experiment.

This spray irrigation experiment on 1000 mu of tobacco marks the first time that China has used spray irrigation on a fairly large stand of economic crops. The test site selected was the Gangjie Commune in Jia County in Xuchang Prefecture, where tobacco production is concentrated. Begun in 1978, all the necessary field engineering was completed within a year. Results of the use of spray irrigation have demonstrated that not only can 50 percent greater yields per mu of flue-cured tobacco be obtained, but about 80 percent of the aphids that infest tobacco are driven away or killed, black stem disease in plants is reduced by 55 percent, and leaf scorch from the bright sun is reduced by about 44 percent. Thus a 60 percent decline in farm chemical investment results. This experiment used a small spray irrigation unit, requiring investment of only 48 yuan per mu, a cost that can be recovered within a single year.

The 1000 mu movable drip irrigation experimental site was a dry hillside in the Mangling district on the banks of the Yellow River in Yanshi County. Water resources are strangely lacking here, and use in the past of the border method of irrigation consumed large quantities of water at high cost. The farmlands of many production teams were irrigated as little as possible or not irrigated at all, and their output was consequently low. Installation of this test site's drip irrigation system was completed at the end of 1979. As a result of the experiments, the effectiveness of drip irrigation in saving water was extremely poignant. The quantity of water used was roughly one-half that used by the border method of irrigation, while output of grain greatly increased. Drip irrigation was done three times during the growing period of wheat (with from 15 to 20 cubic meters of water per mu given each time). Per mu yields amounted to more than 400 jin, for a more than 100 percent increase in output over no irrigation. If drip irrigation were carried out giving crops required water for growth, output could be greatly increased, and the entire investment could be mostly recovered within 2 years. The experts believe that movable drip irrigation is an effective way that is faster, better, and more economical in bringing water conservancy to drought stricken areas that lack water, and that it should be vigorously promoted.

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CSO: 4007

BRIEFS

HUBEI COUNTY COCOON HARVESTS--Beijing, 30 Oct (XINHUA)--Luotian County, Hubei, had as of 15 October procured 3.9 million jin of silkworm cocoons, hitting an all-time-high record. [Beijing XINHUA Domestic Service in Chinese 0136 GMT 30 Oct 80]

CSO: 4007

BRIEFS

FOREST PROTECTION--HUNAN RIBAO carried a commentator's article on 20 October, urging departments concerned to punish people who sabotage mountain forests. The article said: Disorderly felling of trees happens frequently in some parts of our province and the situation is becoming more serious. The reason for this is that leaders have been lenient with people who sabotage forests. They only one-sidedly stressed ideological education instead of reinforcing it with additional punishment. Therefore, in order to protect the forests and safeguard the smooth progress of the four modernizations, we must strictly punish those who indiscriminately fell trees and sabotage mountain resources. [Changsha Hunan Provincial Service in Mandarin 2315 GMT 20 Oct 80 HK]

PRODUCTION RESPONSIBILITY SYSTEM--Xiangtan Prefecture in Hunan Province has perfected the responsibility system of agricultural production in 42,600 production teams. The prefecture reaped a bumper harvest in early rice, and production was increased by 200 million jin. Some production teams are now better off. The prefectural CCP committee encouraged and popularized building up professional teams in order to increase production. [Changsha Hunan Provincial Service in Mandarin 1100 GMT 8 Oct 80 HK]

HUNAN COUNTY PEANUTS HARVEST--Changsha, 4 Nov (XINHUA)--Wangcheng County, Hunan has reaped a bumper harvest from its 3.040 mu peanuts crops. As of mid-October, the county had procured 197,000 jin peanuts. [Beijing XINHUA Domestic Service in Chinese 0135 GMT 4 Nov 80]

CSO: 4007

FIRST STAGE OF WATER-CONSERVANCY PROJECT COMPLETED

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 9, 5 Sep 80 pp 12-14

[Article by Xiong Tiyun [3574 2748 0061], director, Jiangsu Water-Conservancy Department: "Fundamental Experiences in Jiangsu Farmland Water-Conservancy Construction"]

[Excerpts] Following 30 years of efforts under the leadership of the Central Committee, the Provincial CCP Committee, and CCP committees at every echelon, the broad masses of cadres and people of Jiangsu Province have completed preliminary construction on a provincewide scale of a new water system capable of draining, storing, channeling and controlling water and of moving it in a flexible way from one drainage area to another, thereby combating 3 years of major floods, 6 years of great droughts, and 8 years of heavy waterlogging. Grain output has doubled, and cotton output has increased 16-fold. The building of forests, construction of roads, opening of air routes, generation of electricity, and construction of residential areas have been brought about, and electrification and mechanization of agriculture have been promoted. Capital construction for water conservancy and farmlands has become a mainstay in the development of Jiangsu Province's agriculture.

First, large-scale capital construction for water conservancy and farmlands was determined by Jiangsu's natural and economic characteristics.

Jiangsu is a province located along riverbanks and facing the sea at the lower reaches of a river basin. It has numerous rivers, lakes, and low areas where land is scarce and people numerous. All sorts of natural disasters, including flooding, waterlogging, droughts, inundations, alkalinity, tides, and typhoons, pose a serious threat to agricultural production and to the lives and property of the people of the province.

Cultivated land throughout the province currently totals 70 million mu, and with a population of 58.9 million, farmlands average 1.2 mu per person. Not only is the population large and the land scarce, but the urban population is congested and industry is quite centralized; thus, the agricultural situation, whatever it may be, has a major impact on the lives of people in the cities and the countryside, on industrial output, and on the overall national economy. Moreover, in order to assure the stability and increase of agriculture, an effort to change production conditions and to enhance capabilities to combat disasters is necessary, and this has made capital

construction for water conservancy and for farmlands essential. It was with this guiding idea that, even as early as the period of the war of liberation, we began to scoop out the rivers--a process that has continued to this day. In the 30 years since the founding of the People's Republic, a total of more than 23 billion cubic meters of earth and stone have been excavated for the initial construction of five engineering systems: one is a flood-prevention engineering system in which 10 large rivers, 5 large lakes and 38 large and medium-size reservoirs are the main parts; another is a system to prevent waterlogging, in which more than 200 regional watercourses, more than 2,800 main sluice gates in culverts, and 5.2 million horsepower for drainage are the main constituents; another is an engineering system for tide protection, which connects 1,800 kilometers of river and ocean dikes with a line of control structures; another is an engineering system to combat drought, which embraces the Grand Canal from Beijing to Hangzhou, six large-water-conservancy hubs, and a large number of floodgate stations at reservoirs and ponds, and yet another is a system for the prevention of inundations, which consists of a network among the fields consisting of ditches, small culverts with sluice gates, and underground moisture collectors. Through dependence on these five engineering systems, 84 percent of the cultivated land in the province can be irrigated, 91 percent of lowlying areas can get some initial relief from the waterlogging to which they are prone, and more than 7 million mu of saline and alkaline land can be improved. An entire area of 5.6 million mu of boggy fields producing a single crop have been converted to two-crop or three-crop fields, for an increase of 16 million mu in the area of paddy fields. Of this amount, 10 million mu are paddy rice-fields that have been converted from dryland fields in the area north of the Huaihe. The facts have shown that without large-scale water conservancy and farmland capital construction, agricultural production would be incapable of reaching today's levels.

Another step is to make the most of advantages in manpower and to proceed actively, steadily and within one's capabilities.

For countless years, the masses of Jiangsu have suffered greatly from flood and drought disasters. Capital construction of water conservancy and farm-lands projects was their demand. As agricultural output grew and the benefits of projects became manifest, the enthusiasm of the masses for such projects became ever greater. Throughout the decade of the 1950's, an average 320 million cubic meters of earth and stone were moved annually, and by the 1970's this had gradually increased to an average 1.42 billion cubic meters of earth and stone annually, with steady progress being made overall.

Jiangsu Province's policies, beginning with the policy of reliance on labor rather than on credit during the period immediately following liberation and going to today's policies of "voluntary participation and mutual benefit" and "sensible burdens," all of which have had the necessary support of the state, aroused the masses to use the advantage they possess in manpower to combine the contributions made by communes and brigades with labor accumula-tions, with the labor accumulations being paramount. The estimated total investment in projects undertaken throughout the province for the past 30 years has been 14.7 billion yuan, with the state [on one hand] and the

communes and brigades [on the other] each contributing 3.8 billion yuan, and the labor reserves of the masses amounting to about 7.1 billion yuan. The overall proportion of the three is 1:1:2. In the process of carrying out policies, the leaders mastered several main elements:

First is the maintenance of the principle of no impairment to increases in agricultural output for the current year or to increases in distributions to commune members for the current year, while striving to insure that the labor expended by the peasants in the current year's projects, the current year's benefits and the current year's increased output are partially compensated for in the current year. If as a result of large efforts in the capital construction of water conservancy and farmland projects, the projects really produced benefits, agricultural production grew, and the peasants' incomes increased, the masses would support them. Over a period of 30 years, a major flood or drought afflicted the entire province on an average of once in less than every 2 years. Examples were the great Huaihe flood in 1954, the great flood of the Yishuhe in 1974, and the great drought throughout the province in 1978. Benefits provided by the water conservancy and farmland capital construction projects have prevented direct economic losses of more than 1.9 billion yuan in the agricultural production of grain, cotton and livestock, in farm implements, in houses and in the property of the masses. The capital and labor accumulation that communes and production brigades have invested for 30 years in water conservancy and farmland capital construction has been recompensed. If the damage that did not happen to municipal buildings, industrial production, communications and air transportation were to be figured in, then the entire 30 years of investment would be offset. When the accumulated total of increased grain and cotton yields since liberation are added to this, plus the existing fixed assets in water-conservancy construction, direct and indirect benefits of various kinds, as well as how the water-conservancy projects have protected the lives and safety of countless millions of people, the amount is incalculable.

The fourth point is that, though the burden may be heavy and the road long for future water conservancy and farmland capital construction, it is necessary to carry on with no slackening, and to persevere.

Though the past 30 years of capital construction in water conservancy and farmlands have laid a foundation, there is still much to be done toward a fundamental transformation of the conditions of agricultural production and toward the assurance of high and consistent yields in agriculture. In terms of the overall province, the current project standards are still fairly low, and only some of the disasters caused by water and drought can be handled. Damage due to waterlogging and inundation still occurs quite frequently, and there is no protective screen against typhoons. In years of severe drought, water resources for irrigation are still insufficient, integration of the projects is not complete, and management of the projects is still a weak link. A special cause for apprehension is the fact that an outlet for floodwater has not been solved. For the construction of high-yield and consistent-yield farmland throughout the province to meet the needs of agricultural modernization, ceaseless and unremitting work is still needed for capital construction in water conservancy and farmlands, with no slackening

of efforts for a long period of time. Tentatively, for the next 10 years of concentration on construction in the commodity grain bases throughout the province, there will be continued adherence to a program of "small scale first, matched systems first, operations by communes and brigades themselves first, strengthening of management, and main attention on effectiveness." The problems of floods, waterlogging, droughts and inundations will be treated simultaneously, with the main efforts going to waterlogging and inundations, as we launch an overall effort to fight against major floods, heavy waterlogging, great inundations, and severe droughts in order to preserve security and harvest bumper crops.

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CSO: 4007

NEW COTTON, MULBERRY BASES MUST BE ESTABLISHED

Hong Kong ZHONGGUO XINWEN in Chinese 30 Sep 80 pp 5-6

[Text] In accordance with the newly promulgated provincial agricultural zoning regulations, Jiangsu Province has decided that while developing a dominant position in grain production, it will also expand production of the economic crops, cotton, mulberry trees for silkworms and rape, with the future building of new Xuhuai cotton bases and new silkworm mulberry bases.

Next year, cotton acreage alone will be increased by 1 million mu. As long ago as the 1960's, Jiangsu Province began a survey on a provincewide scale of natural resources for agriculture and work on agricultural zoning, using the numerous plains in the province, the quite abundant light and heat resources, and the quite well developed water systems to achieve a dominant position in grain production.

During the 1970's, fairly great development occurred in Jiangsu Province's development of grain, cotton, rape, silkworm mulberry, hog and poultry production. The new zoning has pointed up problems and inadequacies in agricultural production in the province. For example, development of oil-bearing crops has not been rapid, and development of the forestry industry and aquatic products has been poor. Full advantage has not been taken in the development of silkworm mulberry and rape, and production of aquatic products comes nowhere near using available water surface resources.

Furthermore, natural conditions have been violated with the blind movement southward of apple growing and movement northward of citrus growing, as well as the introduction of sugarbeets and sugarcane. This has created an irrational cropping pattern. Zoning has shown that use of resources provincewide requires full development of forestry, livestock raising, sideline occupation, and fishery production, with attention given to creation of forests in hilly and mountainous areas, emphasis on the raising of hogs in the livestock industry accompanied by development of some small herbivorous animals; and in the fishing industry, simultaneous use of both the oceans and fresh water for both making catches and hatching, with the emphasis on hatching.

The zoning also showed that further improvements can be made in the ecology in the process of adapting to, using and changing nature. Continuation of water conservancy projects will be necessary in order to achieve the goal of farmlands that produce high and consistent output.

As agriculture has developed, a definite change has taken place in the form and the emphasis of combat against natural calamities. Dealing with low temperature freeze damage, continual overcast and rainy weather, typhoons and such meteorological disasters have been placed on an important agenda for efforts to combat them. Simple reliance on water conservancy projects is not enough. Overall ways of dealing with them must be taken, including national layouts of cropping patterns, farming systems and the selection of superior varieties.

9432
CSO: 4007

BRIEFS

JIANGSU COUNTY PRAWN CULTURE--This year, the 64 prawn farms in Ganyu county have achieved a good harvest of artificially bred prawn, thanks to an effective production responsibility system that has greatly increased collective and individual enthusiasm to raise production. Total output of prawn this year reached more than 850,000 jin, showing an increase of more than 62 percent over the last year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 16 Nov 80]

JIANGSU PREFECTURE WHEAT SOWING--Nantong prefecture in Jiangsu has stepped up sowing of barley, wheat and naked barley. As of 5 November, the prefecture had more than 2.4 million mu of cropland sown to these three crops. The figure is about 67 percent of the planned acreage. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 10 Nov 80]

ZHENGJIANG PREFECTURE RAPE PLANTING--By the end of last month, Zhengjiang Prefecture of Jiangsu Province completed planting of 470,000 mu of rape. The figure represents an increase of 200,000 mu over that of the corresponding period of last year. This means that the prefecture has fulfilled 65 percent of its rape planting plan for the current year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 7 Nov 80]

JIANGSU PEANUT PRODUCTION--Donghai County, Jiangsu, reaps a good harvest of peanuts this year. The total peanut output for this year is 75 million jin, marking an increase of 17.3 percent as compared with that in 1979. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 27 Oct 80]

JIANGSU FENG COUNTY SOYBEAN--Feng County, Jiangsu, has reaped a bumper harvest of soybean this year. Its total output has reached 31 million jin, a 50 percent increase over last year. Thanks to the increase of the soybean procuring price, the cadres and masses enthusiastically expanded the county's acreage for planting soybean by 30,000 mu this year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 3 Nov 80]

JIANGSU PREFECTURE PEANUTS HARVEST--Xuzhou Prefecture in Jiangsu has reaped a bumper from its 690,000 mu peanuts crops this year. The total output has reached 170 million jin, an increase of 20 percent over last year. This year, the prefecture has planted 100,000 mu peanuts more than last year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 4 Nov 80]

JIANGSU COUNTY GRAIN PRODUCTION--After harvesting and thrashing grain crops with the best of care, peasants in Yancheng County, Jiangsu, have additionally produced some 2 million jin of grain. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 8 Nov 80]

JIANGSU WHEAT MANAGEMENT--Xuzhou prefecture, Jiangsu, has strengthened wheat field management. By the end of October, 6.02 million mu of wheat sowing has been completed. In Fengxian County, Jiangsu, the task of replanting wheat seedlings has been completed in the county's 680,000 mu of wheat fields. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 9 Nov 80]

JIANGSU CORN HARVEST--Due to arbitrary orders of responsible persons of Jiangsu Province's Qidong County party committee to harvest corn prematurely, some 150 million jin of corn went mouldy. [Beijing Domestic Service in Mandarin 0400 GMT 11 Nov 80]

CSO: 4007

BRIEFS

JIANGXI COUNTY EDIBLE-OIL CROPS--Beijing, 30 Oct (XINHUA)--Xixian County, Jiangxi, reaps bumper harvests of edible-oil crops this year. The total yield has reached 3.82 million jin, topping last year by 150 percent. [Beijing XINHUA Domestic Service in Chinese 0136 GMT 30 Oct 80]

CSO: 4007

BRIEFS

JILIN GRAIN BASE--Yitong County, one of the marketable grain producing bases in Jilin Province, has made great progress in agricultural, sideline and animal husbandry production since 1978. The county's total grain output in 1978 was 20 percent higher than it was in 1977, its per capita income has increased from 80 yuan to 113 yuan in 1978 and then to 138 yuan in 1979. In 1979, Yitong County reaped the biggest grain harvest since China's founding. Its total grain and soybean output was 10.1 percent higher than in 1978. In 1980, the county reaped another bumper harvest despite natural calamities. The number of sheep owned by individual commune members in the county has increased from 5,954 in 1979 to 18,670 in 1980; cattle from 599 to 1,843 and poultry to 320,000 [as heard] in 1978, very few commune members used private lots to grow cash crops. According to incomplete statistics, some 12,300 mu of private lots were planted with cash crops in 1979. This increased to 14,000 mu in 1980. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 10 Nov 80 SK]

AUTUMN AFFORESTATION--Jilin Province scored remarkable achievements in autumn afforestation. As of 2 November, the province had afforested 600,000 mu of land, overfulfilling the afforestation plan by 139 percent. [SK061222 Changchun Jilin Provincial Service in Mandarin 2200 GMT 5 Nov 80 SK]

RICE SEED PROCESSING--Construction is being speeded in Jilin City on the first paddyrice seed-processing plant in Jilin Province. Earth was broken for this plant on 7 July this year, and the main foundation for the project is now virtually finished. By spring of next year, construction will be substantially complete, and it will go into production in the fall. The complete set of drying and selection equipment for rice seed processing was introduced from Japan and arrived in Jilin only recently. This equipment has a daily processing capacity of 62.5 tons. If used for processing 40 days each year, its production capacity will be from 2,000 to 4,000 tons, enough to supply from 300,000 to 600,000 mu of wetlands with seeds. It will also conserve from 2,500 to 5,000 tons of seeds. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 29 Aug 80 p 5] 9432

CSO: 4007

BRIEFS

FORESTRY PROTECTION--LIAONING RIBAO on 3 November carries a commentator's article: "It Is Imperative To Understand Anew the Importance of Forestry." The article states: leaders of key forestry areas should have a clear understanding of the important role played by forestry in production. The act of arbitrarily felling trees and failing to protect forest resources by the former leading person of the Benxi County CCP Committee is wrong. It says party committees are responsible for protecting and developing forest resources and comprehensively utilizing natural forest and timber resources. The Liaoning Provincial Forestry Bureau recently telephoned all subordinate units to organize forest cadres and workers to study the report on the Benxi County tree-felling incident carried in the 28 October LIAONING RIBAO. The bureau also urged units concerned to report to the local party committees at regular intervals on the growth of forestry, resources, advance measures and methods to stop arbitrary felling of trees and to strengthen forestry management. [Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 2 Nov 80 SK]

CSO: 4007

BRIEFS

SOYBEAN PRODUCTION--Rural areas in Hulun Buir League, Nei Monggol Autonomous Region, have grown 430,000 mu of soybeans. They enjoyed a good harvest this year. Total output is expected to be 70 million jin. [SK061225 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 5 Nov 80 SK]

CSO: 4007

BRIEFS

PASTORAL ZONING CONFERENCE--The Qinghai Provincial People's Government held a work conference in Xining Municipality 1-7 November to discuss ways to conduct investigations and studies on pastoral resources and to zone areas for raising animals. The conference held that the autonomous prefectures should be regarded as major units in leading the work to investigate pastoral resources and to zone areas for raising specific animals. Every autonomous prefecture should be responsible for building a pastoral commune each year. The initial plan for this work should be fulfilled by 1987. The conference also put forward the following three working periods: 1) in the winter-spring period, strenuous efforts should be made to transfer and train technical cadres and conduct preparatory work in this regard. 2) in the next summer-autumn period, diligent efforts should be made to carry out technical operations in rural areas. 3) in the next winter period, it is necessary to have the data properly analyzed so as to stimulate good results as soon as possible. [SK110608 Xining Qinghai Provincial Service in Mandarin 2330 GMT 9 Nov 80 SK]

RURAL MARKETS--In the first 9 months of 1980, in Haibei Zang Nationality Autonomous Prefecture, Qinghai Province, commodity sales totaled more than 40 million yuan, 8.32 percent more than in the 1979 corresponding period. The annual profit plan was overfulfilled by 2.39 percent, and the total value of farm, livestock and sideline products purchased was 9.65 million yuan. The annual honey purchasing plan was overfulfilled by 50 percent, an all-time record. The sheep wool purchasing plan was overfulfilled by 300,000 jin. [SK130557 Xining Qinghai Provincial Service in Mandarin 2330 GMT 10 Nov 80 SK]

CSO: 4007

IMPORTANCE OF COTTON AND PEANUT PRODUCTION DISCUSSED

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 8, 5 Aug 80 pp 23-24

[Article by Zheng Shoulong [6774 1343 7893], Shandong Provincial Agricultural Department: "Make the Most of Advantages to Produce Cotton and Peanuts"]

[Text] Shandong has always produced an abundance of cotton and peanuts. During the peak year since liberation, cotton was grown on more than 10 million mu and maximum annual output amounted to 5.46 million dan, with more than 1 million dan per year being shipped elsewhere in China and more than 300,000 dan exported. Shandong is China's major cotton-producing province. Shandong has also ranked first in the country in both yield per unit and total output of peanuts. In the year of maximum production it provided the country with more than 300 million jin of edible oil. After 1975, however, peanut production declined by half and the amount of edible oil provided the country also declined by half as a result of the sole emphasis given grain, which squeezed out peanuts and cotton. Not only was there insufficient cotton for shipment elsewhere in China, but the province could not even supply the needs of its own textile mills. As a result, industrial output value and tax revenues declined by more than 600 million yuan. The two counties of Gaotang and Xiajin, which were very expert in the growing of cotton, used to be called "golden Gaotang" and "silver Xiajin," but later on their cotton output became less than it had been, grain production also halted at the level achieved immediately after the founding of the People's Republic, and the people's lives became beset with difficulties. In 1978, when a restructuring of agriculture was proposed, we summarized the lessons of this experience and readjusted anew the pattern of cultivation of grain, cotton, and oil crops so as to make the most of advantages, to emphasize sufficiencies and downplay deficiencies, and to strive after economic benefits to meet the needs of the country and the people.

At the outset of readjustment there was no unified outlook. Some comrades were apprehensive about an expansion of economic crops lest it impair grain output, feeling that come what may, maintenance of grain output was paramount, and that by comparison, economic crops were not indispensable. We felt that the development of crops was necessary for improvement in the people's livelihood and necessary as well for national construction. Furthermore, analysis of instances in which economic crops were developed and increased output of grain was promoted demonstrated that both could be done, and that there was no conflict between the two. In the case of Zhaoyuan County, for example, 30,000 mu of infertile mountain land unsuitable for the growing of grain was converted to the growing of peanuts in 1979. The fer-

tilizer and effort formerly expended on these 30,000 mu were concentrated on other grainfields, with the result that grain output increased by more than 50 million jin; meanwhile, the infertile mountain soil was suitable for the growing of peanuts, saving both labor and fertilizer, and peanut output increased by more than 28 million jin. This demonstrates that the growing of cotton and peanuts can provide capital, cake fertilizer, and other material conditions for the development of grain production and can promote increased output of grain. The masses called the growing of cotton the indispensable "five smalls": small bank (wealth), small oil depot (cottonseed oil), small coal mine (firewood to burn), small chemical fertilizer (award sales of chemical fertilizer and cake fertilizer), and small textiles (cotton to be retained). This shows that economic crops such as cotton and oil corps are not something that can be done without, but that they should be actively developed. Still other comrades felt that if the autonomy of production teams was to be respected, production teams should be allowed to grow whatever they liked, without regard for the state plan. We felt that this was wrong, too. The national economy is a totality, and what we produce is not entirely for the purpose of supplying our own needs. Without the guidance of the state plan, and without consideration of the needs of the whole society, the desired economic benefits cannot be realized and we cannot utilize our advantages to the utmost. Consequently, we decided that in the course of restructuring, it would be necessary both to fulfill state plans and to give attention to the needs of people in the cities and the countryside so as to team up production and needs.

By way of assuring that advantages are utilized to the utmost, over the past 2 years we have annually increased the area actually sown to cotton and oil crops by 500,000 mu, making sure to concentrate these crops in a particular area. Currently, counties in which the area sown to cotton and peanuts each amounts to more than 100,000 mu account for more than 80 percent of the total cotton and peanut area. Additionally, policies governing consumption grain and rewards have been promulgated in order to arouse to the full the enthusiasm of the masses. We have stipulated that for every 10 jin of ginned cotton contributed to the state by a cotton farmer, as determined by the accounting unit, that farmer will receive not less than 365 jin of grain for personal consumption (this amount to include any grain he has produced himself). Those who contribute 20 jin of ginned cotton will receive 380 jin of grain. For every jin sold in excess of 20 jin, the award will be 4 jin of grain or 2 jin of chemical fertilizer. There will be a ceiling of 600 jin of grain, and any further cotton sales will be rewarded with chemical fertilizer rather than with additional grain. For each 40 jin of peanuts provided by a person, 360 jin of grian will be allotted for personal consumption. For each additional jin of peanuts, a grain award of 2 jin will be made. There will be a grain ceiling of 500 jin. When output exceeds the stipulated amount of production the excess is to be divided between the state and the commune members on an 80-20 percent basis. Each production team has also strengthened its internal system of responsibility. Now the enthusiasm of commune members for the growing of cotton and peanuts is very high. Last year the entire province's output of grain increased by more than 3 billion jin, thus achieving a supply in excess of needs. (Prior to 1979, the state annually brought into Shandong Province about 80 million jin of grain). Peanut output increased by 250 million jin, and cotton output increased by 420,000 dan. During the past 2 years, annual distributions to commune members have shown an average increase of more than 10 yuan per capita.

Shandong Province's plan for next year provides for a stabilization of around 80 million mu in the area planted to grain, in order to assure a surplus over needs; a stabilization of about 10 million mu in the amount of cotton planted, enough to satisfy Shandong's textile industry and to turn some over to the state; and stabilization of around 10 million mu in the growing of peanuts as an economic crop, enough to supply the province's own needs, with more to spare for the state and for export.

We have already done some work in making the most of our advantages, but constant summarization of experiences and steady progress are still necessary.

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BRIEFS

SHANDONG EXPORTS SHRIMP--Since October last year, the Yantai Deep-Sea Fishing Company has been signing export contracts with foreign businessmen to sell them frozen shrimp. Between October 1979 and this October, this company exported 510 tons of shrimp and earned for the state US $4,283,000 in foreign exchange. [Jinan DAZHONG RIBAO in Chinese 11 Nov 80 p 1]

SHANDONG COUNTY COTTON HARVEST--Jinan, 30 Oct (XINHUA)--Linqing County, Shandong, reaps bumper cotton harvests this year with the total and per-mu yields reaching 400,000 dan and 110 jin respectively. [Beijing XINHUA Domestic Service in Chinese 0221 GMT 30 Oct 80]

SHANDONG COUNTIES COTTON HARVESTS--Jinan, 30 Oct (XINHUA)--Both Gaotang and Xiajin Counties in Shandong have reaped 250,000 dan of cotton this year, more than double of last year. [Beijing XINHUA Domestic Service in Chinese 0221 GMT 30 Oct 80]

CSO: 4007

PROS, CONS OF HOG, CATTLE RAISING IN MOUNTAINOUS AREAS DISCUSSED

Beijing GUANGMING RIBAO in Chinese 8 Sep 80 p 2

[Article by Liang Heng [2733 5899]: "Which Is More Profitable, the Raising of Hogs or the Raising of Cattle in Mountainous Areas?"]

[Text] Editorial Department:

In the reform of China's agricultural production, emphasis has gone to the production of grain for many years to the neglect of the development of the forestry and livestock raising industries, while in the livestock industry, emphasis has gone to the raising of hogs to the neglect of other livestock. Recently, the writer paid a visit to Heshun County in the Taihang mountain region of Shanxi Province, where three comrades in charge at the County Livestock Bureau gave me a detailed accounting of problems in the raising of cattle and the raising of hogs in the mountain region.

Hogs are animals that eat in shelters and depend mostly on grain. To raise a single hog weighing 150 jin or more takes from 500 to 600 jin of concentrated feed. Cattle are pasture animals who depend mostly on grass. To raise a single head of 600 jin or more requires only 400 jin of concentrated feed. But according to current state purchase prices, a hog usually sells for between 140 and 150 yuan, while cattle sell for from 500 to 600 yuan a head. One head of cattle uses only the concentrated feed for a single hog, yet it can fetch the income gained from four hogs. Secondly, in terms of the amount of work involved, running a pig farm with a capacity of 50 hogs, what with processing of feed, feeding the hogs, and bedding them, a minimum of four or five people will be needed. For a herd of 50 cattle, on the other hand, all that is needed is two herdsmen to look after their feeding. Individual commune members raising cattle can let them be taken care of with the brigade's herd or else have old or young people graze them. Furthermore, cattle fall prey to fewer diseases than do hogs, and this is a great saving in nuisance, too. Third, as regards economic value, there used to be a lot of vigorous propaganda about how the entire body of a pig was a treasure, when actually the value of cattle is also not low. First of all, cattle can be used for work, particularly for cultivating and for hauling in the mountain regions where they are now the principal draft animals. Cattle can be milked, too. A single improved breed's annual production on a dairy farm may amount to 8000 jin. In a production team where the young cattle are used partly for work and partly for milk, a single head can easily produce 2000 jin of milk annually. Cowhide, cow sinews, cow horns, and cow hair are all important raw materials for light industry. A single

cowhide will bring 500 or 600 yuan in income when made into leather shoes. Fourth is edibility. The masses are very fond of beef, too. In the several cities and counties the correspondent visited, pork found no buyers at .70 to .80 yuan per jin in the markets. Most people nowadays prefer lean to fat meat, and beef can satisfy this need; whenever a little is offered for sale, it is all snatched up. The cattle in the Taihang mountain region, in particular, live all year on the nice, cool grassy slopes where they have all kinds of grasses to eat and do not bear the heat of summer. Their flesh has a fine texture with little toughness, and is tender and delicious when cooked. It is exported to Hong Kong where it is well received.

Heshun County is located atop Taihang Mountain. The area of the entire county is 3.375 million mu, of which the area cultivated amounts to 8.3 percent and the area devoted to mountain forests and grazing slopes amounts to more than 80 percent. The frost-free period here is short, with the last frost disappearing only in June and the early frost arriving in early September. But here and along the area toward Xiyang, great pressure was applied by the ultra-left line during the campaign to learn from Dachai requiring the growing of grain and the raising of hogs to meet "program" targets. At their height, collective pig farms throughout the county numbered 127, and commune members were even forced to feed and raise piglets put up for unified sale. In order to be able to grow grain and fodder, numerous communes and brigades sold their yellow oxen to buy "iron oxen," and planted fields on the grazing slopes. As a result, in the 30 years since the founding of the People's Republic, grain production passed the 100 million mark in only 2 years, hogs did not reach the targets of the program and yellow oxen fluctuated around 15,000 head. Following the Third Plenary Session of the 11th Party Central Committee, the County CCP Committee of this county proposed taking meat, milk, and money from the grassy slopes, encouraging communes, brigades, and individual commune members to go in for cattle raising. Within a year and a half, the number of yellow oxen on the hoof throughout the county broke 20,000 head, and some production teams and commune members became wealthy very quickly. In Tuling Commune, commune member Sun Youfu [1327 2589 1381], the sole support of a family of seven, has owed his team 1200 yuan for many years. Both last year and this year, he raised cattle for a net profit of 1300 yuan, paying back entirely his debt of 8 years. Happily he said, "Were it not for the raising of cattle, I could never have thought of repaying this debt my whole life long." A comrade at the Livestock Bureau said, "Which do you think is more profitable to raise in mountain areas, hogs or cattle?" This county has now become a national base for slaughter beef, and they are making long-range plans. By 1985, yellow oxen on the hoof throughout the county will number 50,000 head, and they will annually provide the country with 3 million jin of beef.

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RICE PRODUCTION IN MIANYANG--A bumper rice harvest was reported in Mianyang Prefecture of Sichuan Province this year, with per-mu yield and total output up 9.6 and 18.3 percent respectively over those of last year. The average per-mu yield from a total of 4,589,000 mu was more than 800 jin. The main factor for this year's higher output was the expansion of hybrid rice acreage, which totaled 2,270,000 mu and accounted for 49 percent of the total rice acreage. This year's average per-mu yield from the hybrid varieties was 920 jin, or 248 jin more than that of the conventional varieties; the total [hybrid rice] output was 380 million jin greater than that of last year, and this increase accounted for 65.5 percent of the total increase in rice production in this prefecture. [Chengdu SICHUAN RIBAO in Chinese 12 Oct 80 p 1]

MORE WATER AVAILABLE--By early September, 8.81 billion cm of water were stored in all types of water conservancy projects in Sichuan, an increase of 1.1 billion cm over the comparable period of last year. This will help the province boost its farm output further next year. [Chengdu SICHUAN RIBAO in Chinese 14 Oct 80 p 1]

MALE STERILE COTTON VARIETY--The Sichuan Provincial Cotton Research Coordination Unit has for the first time used male sterile cotton material to breed a new variety of male sterile cotton, opening a new technological road for the use of cotton hybrid heterosis in China. Use of the heterosis of male sterile hybrid cotton was a major research problem given Sichuan by the State Science Commission. Following 8 years of research and experimentation beginning in 1972, the pertinent research unit of the Sichuan provincial male sterile hybrid cotton heterosis use research coordination unit, which undertook this research task, finally succeeded in completing a large amount of research work on male sterile wild plants discovered in Yilong in Sichuan Province, breeding new variety male sterile cotton hybrids Chuanza No 1, Chuanza No 2, and Chuanza No 3. These new varieties are characterized by rapid growth, early maturation, high output, and good qulaity. Beginning in 1977, comparative testing on small areas was done for 3 years in five cottongrowing counties in Nanchong Prefecture, Sichuan Province. Their production output was from 15 to 18 percent higher than conventional types. In addition, these varieties were used for experimental planting in large area tests on more than 4,800 mu, where they produced more than 20 percent more cotton than others for the first time in China. Last year, the coordination unit proudly received Sichuan Province's highest reward for scientific and technical accomplishment, and the more than 100,000 mu of this cotton planted throughout Sichuan Province this year is growing well. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 10 Sep 80 p 7] 9432

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XINJIANG COUNTY SHEEP BREEDING--Mori Kazak Autonomous County has collected and stored 1.6 million jin of feed grass for domestic animals during winter. Preparations are being made for the mating of livestock. The county has some 50,000 breeding sheep. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 29 Oct 80]

XINJIANG COTTON PROCUREMENT--The counties and cities directly under Xinjiang's Ili Kazak Autonomous Prefecture have overfulfilled the state plans for summer crops procurement. As of 25 October, all these counties and cities as well as Ili and (Suitong) state farm and land reclamation bureaus had procured 299.87 million jin of wheat or an increase of some 60 million jin over the same period last year, thereby overfulfilling the annual quota by 7 percent. They had also procured 7.18 million jin of oil cakes, or an increase of 3.69 million jin over the same period last year, thereby overfulfilling the state annual quota by 3 percent. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 30 Oct 80]

XINJIANG COUNTY COTTON PROCUREMENT--As of 18 October, Xinjiang's Yopurga County had overfulfilled this year's cotton procurement plan. This county had reaped rice cotton harvest from its 44,000 mu of cotton this year. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 30 Oct 80]

XINJIANG COTTON PRODUCTION--The farms and land reclamation units in Xinjiang Autonomous region have gathered a bumper harvest from 960,000 mu of cotton this year. Total output of ginned cotton reached 660,000 dan, an increase of 60 percent over the bumper year of 1979. In 1980, the sown acreage of cotton has been expanded by 200,000 mu as compared with 1979. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 31 Oct 80]

XINJIANG OIL-BEARING CROP--Altay prefecture, Xinjiang region, harvested 10 million jin of oil-bearing crops this year, some 30 percent more than last year. By early November, some 9.13 million of oil-bearing seeds had been purchased. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 15 Nov 80]

XINJIANG WHEAT REQUISITION--As of 5 November, the Xinjiang autonomous region requisitioned and procured more than 1 billion jin of wheat and 31 million jin of edible oil. These figures respectively represent a 95.9 percent fulfillment of the region's wheat requisition plan for 1980 and a 98.8 percent fulfillment of its 1980 edible oil requisition target. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 13 Nov 80]

AGRICULTURAL PLANNING--After more than 5 months of work, a comprehensive agricultural plan for Xinjiang has been initially completed. The plan was worked out jointly by more than 40 experts and scientists under the leadership of the autonomous region agricultural commission and agricultural regional planning commission. The comprehensive plan, based on results of past investigations and studies and a great deal of technological and economic data, analyzes Xinjiang's basic agricultural conditions, points out future orientation of agricultural production, explains in detail the production characteristics of grain, cotton, oil-bearing crops, sugar, livestock, forestry, fruit, sericulture and fishery in Xinjiang and expounds the major technological measures for improving agricultural production in the region. It is an important guidance and reference for the agricultural development of Xinjiang. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 6 Nov 80 OW]

NEW ORGANIZATIONS--Urumqi, 7 Nov (XINHUA)--Supply and marketing managing departments have been established in 22 counties in Xinjiang to serve the enterprises run by communes and production brigades and teams. They help these enterprises purchase production equipment and raw materials, sell their products, and give guidance in their production. [OW121207 Beijing XINHUA Domestic Service in Chinese 0143 GMT 7 Nov 80 OW]

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XIZANG GRAIN-LIVESTOCK OUTPUT--Thanks to the implementation of the party Central Committee's directive on work in Xizang which has further stimulated the productive enthusiasm on the part of peasants and herdsmen, grain output and livestocks in Burang County are expected to reach 4.2 million jin and more than 100,000 head respectively in 1980. [Lhasa Xizang Regional Service in Mandarin 1100 GMT 31 Oct 80]

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SUGARCANE EXPANSION PLAN--The Yunnan People's Government recently convened a special conference in which it was decided to make the most of Yunnan's special advantages by adopting methods to local situations in the vigorous development of sugarcane production. Called for was an increase in sugar production from the present 170,000 tons annually to 350,000 tons by 1985. Nineteen counties in Dehong and Baoshan prefectures in western Yunnan and in Yuxi and Honghe prefectures in southern Yunnan have a subtropical climate suited to the growth of sugarcane. Thirty-one sugar mills already exist in these areas. As a result of emphasis in the past on "grain as the key link," to the neglect of sugarcane growing, the sugar mills lacked sufficient raw materials and, prior to 1978, their annual output hovered around 140,000 tons. It has only been during the past 2 years that increases have taken place. The provincial government decided to expand the area planted to sugarcane this year and next by 150,000 mu so that the seven sugar mills now being built will be assured adequate supplies of raw materials, once they are finished and go into production. The sugar manufacturing conference convened by the Yunnan People's Government also decided to expand 14 old sugar mills and to construct 8 more before 1985. The area planted to sugarcane will be enlarged to 1.1 million mu. It is estimated that by 1985, the number of sugar mills throughout the province will have increased to 46, producing 350,000 tons of sugar annually. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 5 Sep 80 p 8] 9432

EMERGENCY CIRCULAR--The Yunnan provincial headquarters for combating drought and preventing flood issued an emergency circular on 18 October calling for promoting water storage work. The circular said: from January to September this year, rainfall was scanty throughout the province and droughts appeared in a number of areas. As of early October, the actual amount of water in storage was 2.655 billion cubic meters which showed a decrease of 0.457 billion cubic meters over the same period last year. Therefore, it is necessary to grasp water storage work now. All places must protect and economize water consumption, bringing the role of water conservancy projects into full play. [HK061037 Kunming Yunnan Provincial Service in Mandarin 1100 GMT 22 Oct 80 HK]

CSO: 4007

BETTER SUPPLY OF GOODS ON URBAN, RURAL MARKETS

Hangzhou ZHEJIANG RIBAO in Chinese 15 Aug 80 p 1

[Article by Tao Jinxing [7118 6930 5887] and Lin Yongnian [2651 3057 1628]: "Urban and Rural Markets in the Province Becoming Brisker Day by Day"]

[Text] Since the beginning of this year, the urban rural markets in the province have presented a prosperous scene of brisk buying and selling, abundant goods, and active exchange. From January through July, the total retail turnover in the province reached 4,965,000,000 yuan, 21.6 percent higher than in the same period last year.

Following the big increase in the purchasing of farm produce and sideline products and of manufactured goods for daily use, the commodity supply situation in the markets has markedly improved. The unbalanced and light supply of meat and eggs in the urban and rural markets in the past has been opened wide. From January through July of this year, the retail price of pork was marked down 4 times, and a total of 5.02 million pigs were sold in the province, an increase of 710,000 pigs compared with those sold in the same period last year. The supply of fresh eggs also increased by 4.95 million jin over that of the same period last year. There was also a fairly full supply of candy, pastry, and cold drinks. The supply of manufactured goods for daily use on the province's urban rural markets also increased in variety and assortment, expanded in quantity, and improved in quality. From January through July of this year, polyester fiber-blended cloth, silks and satins, towels, sleeveless undershirts, television sets, sewing machines, wristwatches, bicycles, radios, and thermos flasks showed separate increases ranging from 10 percent to over 200 percent above the amounts in the corresponding period of last year. The supply of goods like soap, washing powder, iron wire, and nails, which had long been tight, showed a gradual tendency to loosen up in both the cities and countryside. According to statistics compiled by the state-operated commercial departments, from January through July the total retail turnover was 1.11 billion yuan, 21.5 percent increase as compared with that in the corresponding period of last year.

Since the beginning of this year, the urban and rural markets in our province, under the guidance of the state plan, have undergone a universal readjustment, and there have appeared more channels for commercial circulation and more forms of management, so that the circulation of commodities between town and country and between areas has tended to become more brisk. From the three municipalities of Hangzhou, Ningbo, and Wenzhou to many county seats and market towns in the province,

commercial network points have increased on a wide scale, and all kinds of business units like industrial self-marketing retail departments, joint agricultural-industrial-commercial enterprises, and trading warehouses have grown in number day by day. Based upon the needs of society, a group of collective or individual businesses that provide food and drink, repairs, haircuts, photographs, or sewing have been approved. According to statistics for Hangzhou, up to the present time, industrial and other departments have set up over 120 retail departments and 559 neighborhood-run commercial and service network points. Many commercial enterprises have vigorously opened up new trade routes and restored old ones, and they purchase more and more goods themselves, causing some goods that had not been seen on the market for many years to again be put before customers. I understand that, in the provincial purchasing plan for the general merchandise system, goods from the outside account for about 15 percent of the total amount of goods, thereby enriching the market supply.

In the first half of this year, there was another change in the urban and rural market supply in our province, i.e., the demands of the masses, when buying goods, for variety, assortment, price, and quality have become higher and their selectivity stronger. The people's priority requirements for goods have gradually turned from "eating, wearing, and using" to "using, wearing, and eating." In the rural areas, the peasants' demands for construction materials to build new houses and for electrical appliances have become extremely urgent. Part of their purchasing power has turned to durable consumer goods and household ornaments. Compared with the corresponding period of last year, in the first 7 months of this year, the state-run commercial departments supplied 49,000 television sets, an increase of 33,000; supplied 52,000 electrical fans, an increase of 33,000; and supplied 440,000 wristwatches, an increase of over 130,000. The sales volume of woolen goods, silks and satins has also greatly increased. According to reports from commercial departments, the trend of some consumers in purchasing goods is: "What is eaten must be nutritious, what is worn must be good looking, and what is used must be of superior quality."

The brisk situation in our province's markets during the first 7 months of this year reflected the implementation of the spirit of the Third Plenary Session of the Party Central Committee, the emancipation of the mind, the policy of relaxation, the effective readjustment of the national economy, and the steady and healthy development of industrial and agricultural production. According to statistics, from January through July of this year, the total volume of farm produce and sideline products purchased increased 20.7 percent as compared with that of the corresponding period of last year, and the total volume of state-run commercial and local industrial products increased 30 percent over that of the corresponding period of last year.

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AGRICULTURAL BANK LOANS--As of 31 August, agricultural banks and credit cooperatives in Zhejiang Province had issued loans totaling 106 million yuan to 34,000 commune and brigade enterprises, a 1.4-fold increase over the same period last year. Working capital accounted for 160 million yuan of these loans, and loans for equipment amounted to another 100 million yuan. In their issuance of loans, agricultural banks and credit cooperatives everywhere give attention to deriving economic benefits, practicing discriminatory treatment, and giving selective support. A survey of enterprises shows that more than 96 percent of the total amount loaned produced good economic results. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 22 Sep 80 p 1] 9432

COMMUNE, BRIGADE-RUN ENTERPRISES--New growth has taken place once again during the first half of this year in China's commune and production brigade enterprises in rural villages. According to incomplete statistics from 28 provinces, municipalities, and autonomous regions (with the exception of Tibet), as of the end of June, total output value of commune and brigade enterprises had increased by 20 percent over the same period last year. The increase in Jiangsu Province was 58 percent; in Zhejiang more than 35 percent; and in theprovinces of Henan, Shandong, Sichuan, and Hubei, more than 20 percent. Twenty products produced by commune and brigade enterprises exceeded last year's production levels for the same period. Currently, there are more than 1.48 million commune and brigade enterprises nationwide (except for Tibet). More than 90 percent of the communes and more than 80 percent of the brigades operate processing industries, mining industries, transportation industries, construction industries, or service industries of various kinds, and they are vigorously developing planting industries and breeding industries. Production team category 1 enterprises are the most numerous. [Excerpt] [Hangzhou ZHEJIANG RIBAO in Chinese 20 Sep 80 p 1] 9432

JIAXING PREFECTURE ELECTRICITY CONSERVATION--Between January and August this year, Jiaxing Prefecture conserved a total of 19.77 million kilowatt hours of electricity used in agricultural drainage and irrigation, for an average decline of 14.53 kilowatt hours per mu of farmland. This was a reduction in consumption over the same period last year of 4.13 kilowatt hours. The amount of electric power thus conserved can, at a minimum, produce 15,000 tons more chemical fertilizer or 263,000 tons of cement. Persons in charge at the units concerned in the prefecture told reporters that attention to two situations accounts for the savings in the use of electricity by agriculture in Jiaxing Prefecture. One was putting into effect a rational policy of responsibility, reforming the method of accounting for expenditures, and implementing a system for buying water. The other was the establishment

and perfection of a system of responsibility in which the main ingredient was "six fixes, two guarantees, and one reward," whereby the degree of success in saving water and conserving electricity in machine depots was directly related to the economic welfare of the machine depot personnel, thereby arousing their enthusiasm for conservation of electricity. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 28 Sep 80 p 1] 9432

ZHEJIANG RICE SEEDS--Ruian County, Zhejiang, has selected and reserved some 1.5 million jin of fine late rice seeds for use in 1981. [Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 10 Nov 80]

MOUNTAIN POND FISH OUTPUT--In our province's mountainous areas are 360,000 mu of mountain ponds and pools, and among them fish are reared on 200,000 mu, which had an average per-mu output last year of 56 jin of fish. If these waters could be like the Wucun commune, which ahd a per-mu output of 411 jin of fish, then the fish-eating level of the people in the mountainous areas could be greatly raised. Agriculture depends on policies and so does fish rearing. Practice in every place proves that the key to raising the output of fish reared in mountain ponds is to strengthen the responsibility systems and to arouse the enthusiasm of the masses for rearing fish. Of all the responsibility systems, that of having the household manage or contract the work in fish-rearing ponds is best suited for developing the fishery in mountain ponds and pools. Many localities contract out to commune member households small ponds in the mountains and on the level land along the coast for them to rear fish, and whether the fish are reared well has a direct relationship on the commune members' personal interests. In general, they painstakingly manage the fish rearing, doubling and redoubling the ponds' fish output. This method of dividing the mountain pond management by household and contracting with the household can promote the development of fisheries in the mountainous areas, and is advantageous to the consolidation of the national economy and the improvement of the peoples' life and is being popularized suited to local conditions. Some localities are now also testing the methods of having the commune members raise fish full-time or of leasing out small ponds to commune members for their private rearing of fish. These methods should also be allowed. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 15 Aug 80 p 1] 9727

ZHEJIANG COUNTY TANGERINE--This year Huangyan County, Zhejiang, is reaping a bumper tangerine harvest. Total output is expected to exceed 800,000 dan. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 2 Nov 80]

AGRICULTURAL COMMISSION MEETING--The meeting of directors of the prefectural and municipal agricultural commissions, sponsored by the Zhejiang Provincial Agricultural Commission in Fuyang County, Zhejiang, was concluded on 7 November. Vice Governor Yuan Fanglie addressed the meeting. The meeting stressed the importance of surveying agricultural resources and completing agricultural zoning and made specific proposals on this important task. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 8 Nov 80 OW]

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ABSTRACTS

PLANT SCIENCE

NANJING DAXUE XUEBAO (ZIRAN KEXUE) [JOURNAL OF NANJING UNIVERSITY (NATURAL SCIENCE EDITION)] No 3, Sep 80;..... 51

'GANG' BLAMED FOR AGRICULTURAL PRODUCTION SHORTAGE

Beijing NONGYE JINGJI WENTI [AGRICULTURAL ECONOMIC ISSUES] in Chinese No 3, 1980 p 10

[Article by Yang Jun (2799 0971): "The Question Concerning the Objective Patterns in Agricultural Production"]

[Text] I. Since the founding of the nation, what has been the situation of our nation's agriculture? Taking food grains for example, in the 1950's, we were self sufficient and there was a surplus, in the 1960's, the surplus turned into a shortage, in the 1970's, the shortages increased. In the provinces, three cities and one province have always imported food grains, except for these, eight other provinces (regions) have become dependent upon imports since the 1970's and for the past 2 years, imports of food grains by these nine provinces and three cities have increased greatly (in eight provinces (regions), the increase was 156 percent, in the one province and three cities, the increase was 30 percent). The number of provinces which always had a surplus for export decreased from 14 to 10 and the amount exported has dropped. Therefore, for the past 2 years the balance of surplus vs. shortage showed a big gap. The consumption of edible oil, sugar, cloth and animal and poultry products is still being limited by the low level of supply for long periods.

Our nation completed land reform at the beginning of the 1950's, and the completion of the cooperativization movement followed. For the past several decades, large scale water conservancy work and basic farmland construction have continued. The state is providing more and more farm machinery, chemical fertilizers and farm chemicals to agriculture. Agricultural research and agricultural education were actively carried out in a big way before the "Cultural Revolution." All these show that social labor and production in our nation's agriculture have all developed and improved greatly. Yet, we must face this cruel fact: our nation's food grains changed from a surplus to a shortage and there is a continuing shortage, and other necessary sideline foodstuffs are also constantly in short supply. How can this be understood? What is the fundamental reason? Besides a relatively rapid increase in population and the high frequency of natural disasters, the most fundamental reason is that during the past decade and more, agricultural production was seriously sabotaged by the "gang of four." Some regions already have "infertile land and poor people." The extreme leftist line of the "gang of four" is contrary to the natural patterns and economic patterns in agricultural production. Although during earlier years, the phenomenon of an irrational agricultural, forestry and animal husbandry

structure emerged, during the period when the "gang of four" was rampant, the situation become very serious.

"The whims of the bureaucrats" contradicted the objective natural and economic patterns, the remnant poison is still profound and has not been completely eliminated. In some regions the poison is still spreading, causing our nation's people to work hard without getting the fruits of life and economic results which they should have. This has become one of the major concerns of many people.

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PROBLEMS IN, SOLUTIONS FOR DEVELOPING TEA PRODUCTION OUTLINED

Beijing NONGYE JINGJI WENTI [AGRICULTURAL ECONOMIC ISSUES] in Chinese No 3, 1980 pp 33 & 64

[Article by Xie Hongli (6200 3163 4409): "Adjust Policy to Promote the Rapid Development of Tea Production"]

[Text] Tea has always been our nation's traditional export commodity. Since the founding of new China and over the past 30 years, tea production rapidly revived and developed. Comparisons of 1979 and 1951 show that tea production increased 2.5 times, the amount purchased by the authorities increased nearly 5 times, the amount of exports increased nearly 3 times. Yet, our nation's tea production at present still cannot satisfy the needs of foreign trade and the domestic market.

The major problems are:

I. Tea Plantations Are Scattered, the Level of Production Management Is Low

The nation's tea production is scattered in 18 provinces and regions, 400 or 500 counties and also among many production teams. Because production is scattered, the level of management of tea plantations is generally low, causing a low unit yield and poor quality. In 1978, our nation's area of tea plantations constituted 45 percent of the world's, but the yield constituted only 15 percent. The amount of exports accounted for only 13 percent. Average per mu yield of tea in our nation is over 70 jin, about half that of Sri Lanka, one-third that of India, and one-fourth that of Japan. Compared to the teas of these nations, our nation's teas have a narrow bud, the leaves are thin, the exterior is coarse and loose, the fragrance is mild, the taste is light, the leaves are not durable, etc.

II. The Commune Brigades Generally Engage in Refining and Processing Tea Leaves, Affecting the Quality of the Product

Since the movement to organize agricultural cooperatives, preliminary processing of tea leaves in our nation is done by the commune brigade tea farms. Refined tea is processed by the state-run tea refineries. But for the past several years, especially since last year, to increase the income of the farmers, tea producing regions everywhere asked the commune brigades to operate tea refineries. Refining and processing of tea leaves is a complex technological process and it requires a definite amount of machinery and equipment and technical strength to assure the quality of the tea leaves. Commune brigade tea refineries frequently lack these conditions, and the quality of the tea cannot be assured. This has seriously affected the completion of export plans.

III. The Industrial and Commercial Taxes on Tea Are High, There Are Many Management Links, the Retail Price Is Therefore High, the Purchase Price Is Low, the Managerial Departments Suffer Losses

Of the industrial and commercial taxes levied on tea, the tax rate on coarse tea is 40 percent, and the tax on refined tea is even higher. For example, Henan Province's first grade and first class mao feng tea is purchased at 495 yuan per dan, the market retail price is 850 yuan, a difference of 355 yuan, the tax is 223.5 yuan, or 63.84 percent of the difference between the purchase and the sales prices. Tea is frequently handled by five to six intermediate concerns from the time it is purchased as coarse tea to the time it is sold as refined tea to the consumer. Because there are many intermediate concerns, the taxes are high, the costs are great, the sale price is pushed upward, unfavorable to the production and sale of tea.

IV. Poor Management of the Market, the Loss of Tea Is Serious

According to incomplete statistics, the entire nation produced about 5.76 million dan of tea in 1979. The state purchased 4.8 million dan, deducting the amount normally kept by the commune brigades for their own use, the amount of loss of tea is about 400,000 to 500,000 dan. Many commune brigades and state farms take the tea they produce to the collective market or set up their own retail outlets to sell the tea. Many organizations, groups, enterprises and plants and mines also go to the commune brigades or state farms to purchase tea, causing a loss of 30 to 40 million yuan in taxes. The teas produced and sold by the commune brigades and state farms themselves are often higher grade local brand name teas. For example, long jing tea is in short supply even at retail stores that sell only to foreign visitors. But the commune brigades are selling it en masse in their own retail outlets.

To promote the development of tea production, increase the amount, raise the quality, and satisfy the demands of foreign and domestic markets, the following should be grasped well in adjusting the national economy:

I. Adjust the Distribution, Grasp the Construction of Tea Production Bases Well

The technology of tea production is strong. The quality of tea is determined first by the quality of the raw material of fresh leaves and this is determined in turn by the variety of the tea tree, external environmental conditions, management of the tea plantation, prevention and control of diseases and insect pests. Therefore, planting of tea trees must be appropriately centralized to facilitate scientific management. At present, the overly scattered production situation must be gradually adjusted. The planting areas of tea plantations in regions where the soil and climatic conditions are suitable for the production of tea trees, regions where the production is higher and where the quality is better should be expanded. Governments at all levels should provide assistance in capital, materials and fertilizers to establish a group of commercial tea production bases.

II. Industrial and Commercial Taxes Should Be Reduced, the Circulation Links Should Be Simplified, the Purchasing Price Should Be Raised, and the Retail Price Should Be Stabilized or Appropriately Lowered

Except for a few regional brand name teas at high prices, it is suggested that the tax rate on most varieties of tea be reduced from 40 to 20 percent and the other

20 percent be used to raise the purchasing price and the benefits should be given to the commune brigades. To promote the improvement of the quality of tea, seasonal price differentials and grade differentials in price should be implemented. Tea that is exported and earns a lot of foreign exchange can also be subsidized above the price to reward the commune brigades, pickers and purchasers. The number of links in the circulation should be reduced. This is an important way to turn losses into profits, increase yield and conserve, and reduce the retail price. The potential in these aspects is great. Some provinces have already realized direct exports by the tea refineries, greatly reducing costs and expenditures, and outstanding results have been achieved. This work must be tightly grasped by all localities.

III. Profits of the Tea Refineries Are Mostly Returned to the Commune Brigades Providing Coarse Tea Raw Material

The profits of the tea refineries are greater, therefore each locality has asked to build them in a big way. According to information provided by the Yunnan Provincial Tea Company, the province produces about 300,000 dan of tea annually. The profits of the tea refineries are higher, and a similar situation is found in other provinces. Planting of tea trees by the production teams, picking, preliminary processing, state purchases and refining constitute a complete and mutually connected process. The profits of refining is overly large. Actually, part of the profits has been taken away from that of commune brigade labor. To solve this problem, the best method is to return most of the profit from refining to the commune brigades that provided the coarse tea raw materials and truly give the benefits to the farmers. This can overcome the blind development of tea refineries by the commune brigades and benefit planned management.

IV. Market Management Should Be Strengthened to Make Sure the State Purchase Plans, Transfer Plans and Export Plans Are Completed

Tea is a second category commodity in the state's planned management. Planned adjustment should be the key. The state should sign contracts with the commune brigades. The state should assist the commune brigades to produce tea by providing capital and materials. The commune brigades should exert efforts to elevate the yield and quality and should sell to the state the appropriate portion on time and according to the required quality and quantity. The portion beyond the plan can be handled by the state to reward those commune brigades that sell more to the state by reducing or eliminating industrial and commercial taxes. The state can also reward those commune brigades that have sold more and good quality tea by providing some of the industrial products urgently needed by the farmers, such as bicycles and sewing machines so that the commune brigades can combine state benefits, collective benefits and individual benefits together well. To strictly prohibit the organizations and groups from purchasing tea from commune brigades on their own, and prohibit the commune brigades and the state farms from going to the collective market or setting up their own retail outlets to sell tea, they must pay taxes according to policy.

As long as our policy is correct, and by correctly handling the relationship between the state, the collective, the individual and production, circulation and consumption, tea production will surely undergo rapid development.

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FURTHER CONSTRUCTION OF GRASSLANDS URGED

Beijing NONGYE JINGJI WENTI [AGRICULTURAL ECONOMICS ISSUES] in Chinese No 3, 1980 pp 34, 35, 4

[Article by Zheng Boquan (6774 0130 2938): "Several Opinions On Strengthening Construction of Grasslands"]

[Excerpts] I. Our nation's grasslands are vast and rich and their potential is great. They have created superior conditions for the development of animal husbandry. But, according to statistics of major grazing regions, there were a total of 83,865,000 head of domesticated animals in 1978, constituting 14.8 percent of the total number of 565,120,000 head nationwide. Those in the major grazing regions constituted 53.4 percent of the total of 160,120,000 head in 1949. If the 301,285,000 head of hogs kept in pig pens are deducted, there are a total of 263,830,000 head of herbivore animals nationwide. After deducting the number of domesticated animals in the major grazing regions, there are 179,965,000 head of herbivore animals in farm regions (these may possibly include the animals raised on the 1 billion mu of grassy mountains and grassy slopes, because of a lack of individual statistics, they cannot be separated.) Animals in the major grazing regions constitute 46.8 percent of the animals in farm regions. The numbers show the large and small animals in the major grazing regions are almost equivalent to half of the herbivore animals in agricultural regions. The area of grassland in grazing regions is three times larger than the area of farmland but the number of animals raised is less than that in agricultural regions. This fact is sufficient to show that the potential of the grazing regions is great and the future is bright. To develop the superiority of grasslands to raise more animals, construction of grassland must be hastened.

II. Although our nation's grassland resources are rich and the conditions for developing animal husbandry are very good, because of use and because construction is neglected there are many problems in the construction of grasslands.

1. Degeneration of grasslands and a drop in the quality of grass for grazing.

2. Grassland is claimed for planting of food grains, agriculture squeezes out grazing, thus damaging both agriculture and animal husbandry. Claiming wasteland for planting has existed since ancient times. Since the founding of the nation, it has not stopped. Even when state farms did not reclaim land, the communes and brigades did. Under the sabotage of the leftist line of Lin Biao and the "gang of four", this was more serious. Taking Xinjiang as an example, wasteland was reclaimed

each year and the area of cultivated land expanded year after year but food grain production did not increase. On the contrary, food grain production dropped in 1975 from the highest annual yield of 6.68 billion jin in 1966 to 6.29 billion jin. At the same time, the number of large and small animals in 1978 was less than the highest number in the past reached in 1965 by 985,000 head, or 10.3 percent. Also, the half agricultural and half grazing regions of Suihua and Nenjiang in Heilongjiang originally had grasslands of 41.23 million mu. Because of reclamation of wasteland for planting food grains, the area of grassland in 1978 was only 22.54 million mu, a reduction of 54.6 percent. As the land was reclaimed, it became sandy. According to statistics, of the over 500 million mu of grassland in Nei Monggol, the area that has become sandy has reached over 80 million mu. According to calculations, reclaiming one mu of grassland will cause 3 mu of grasslands to become sandy or degenerate. Finally, "farmland consumes grazing fields, and wind and sand consume farmland," and a situation in which both agriculture and animal husbandry are harmed is created.

3. Serious damage by rats destroys grasslands. According to statistics of Qinghai, the area damaged by rats has reached 120 million mu, constituting one-eighth of the total area of grasslands. Because of serious damage by rats, 5 billion jin of dry grass are lost annually, equivalent to the amount of feed for over 5 million sheep.

III. Construction of grasslands is the center for developing animal husbandry. Comrade Mao Zedong pointed out once, "grazing grass is a question of life and death for domesticated animals." The practical experience of the masses is, "without grass for grazing it is difficult to raise domesticated animals." Therefore when we develop animal husbandry, we must grasp construction of grasslands tightly.

Our grazing regions are mostly in high and cold areas and mountain areas. Each year, half of the year is spent in cold seasons. Because our grasslands are naturally grown and are not produced by man, the grazing grass is dry and withers in winter and after a strong wind little is left. When covered by snow, finding grass for food is difficult, grass reserves are limited, and each year 6 percent of the domesticated animals always die of cold, hunger or disease. More die in years of disasters. It is not possible to change the backward situation of animal husbandry if grasslands are not constructed.

First, renewal of grazing fields of large areas should be widely watched. The method of renewing grazing fields of large area is to widely mobilize the masses, strengthen the sense of responsibility of herders, give them a short period of training, let them gain the scientific knowledge of protecting the grazing fields, and let them understand the natural patterns of growth of grass for grazing and the relationship between seeking food by the domesticated animals and the growth of grass for grazing.

Second, construct man-made grasslands according to plan. Since the founding of the nation, we have only encircled a total area of 60 million mu as grasslands. Man-made grasslands are even less in area, only 9 million mu. Compared to nations with developed animal husbandry, Holland's man-made grasslands constitute over 80 percent of the total, New Zealand's over 60 percent and England's 5% percent. We have much less.

Fifth, establish the right to use grazing fields. Degeneration of grass for grazing and grazing fields becoming sandy are also greatly related to the unstable use of grasslands. When the right to use grasslands is not fixed, everyone competes for the grasslands for his herds. Herders go to where the grass is good, disregarding the degree of renewal of the grass for grazing. As soon as tender buds emerge, cattle and sheep are released to graze. This phenomenon is more serious in regions of mixed agriculture and animal husbandry. At the same time, there is nobody to take care of the grass for grazing, there is nobody to plant trees, and over the 30 years since the founding of the nation, the grazing regions have not been forested. Singular efforts were made to raise animals in quantity, like singular efforts to produce food grains and the benefits of combined agriculture and animal husbandry cannot be gained. To construct grasslands well, the best method is to take the commune brigades as the unit, to mark out the grazing fields clearly, and to establish fixed rights for the use of grazing fields. The use of grazing fields and construction of grazing fields should be tightly combined to strengthen the duties of commune brigades to protect the grazing fields and to construct the grazing fields.

In solving the problem of construction of grasslands, economic results must also be emphasized. No matter how good the technical results, if their economic benefits cannot be combined with the personal benefits of the masses, then they cannot be popularized easily and will not be easily accepted by the masses.

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SOLUTIONS OFFERED FOR SURPLUS RURAL MANPOWER PROBLEM

Successful Example in Liaoning

Beijing RENMIN RIBAO in Chinese 15 Sep 80 p 5

[Article by reporter Wang Ke [3769 3784] and correspondent Wu Guang [0702 0342]: "Chengjiao Commune in Panshan County Gathers Fund To Build Plant To Utilize Surplus Manpower"]

[Text] Since October of last year, the Chengjiao Commune in Panshan County, Liaoning Province, has, by utilizing a portion of surplus manpower, built five plants, including printing, carpet, regenerated rubber, and wood processing, using voluntary investment capital and the joint management method. These plants not only have employed more than 240 surplus personnel but also have satisfied the needs of local production and people's lives, with the result that these plants have been very well received by the local populace.

In recent years, with the progress of national construction undertakings, and especially after the construction and exploitation of the Liaohe oilfield, a large area of cultivated land that belonged to the Chengjiao Commune has been taken up. As a result, there are now an average of only 4.5 fen of cultivable land area per person, and more than 3,500 manpower have become surplus. They have urgently been demanding a solution to this unemployment problem. In the past 2 years, 2,000 persons have been placed in various enterprises operated by the Chengjiao Commune, but 1,500 or so are still unemployed. Thereupon, some people came up with the idea of organizing a company with voluntary investment capital. The party committee members of Chengjiao Commune and Panshan County considered the idea feasible and rendered timely assistance to them in matters related to materials and taxes so that these plants could be organized quickly.

The structure of these plants is not the same as that of an ordinary plant. The plant manager, the accountant, and the personnel in charge of supply and distribution are persons selected from the masses who display a certain aptitude and a special knowledge during the process of organizing these companies. They perform their appointed tasks when there is work to do and join with other workers in production when there is none. The production plans of these plants are determined not by the national government or by the higher level office but by the enterprises themselves according to the needs of society. The labor wage is determined according to the worker's level of skill and his contributions. They

are firmly upholding the following three principles while conducting their business management: 1) In order to fully demonstrate the advantage of "a small ship is easy to turn around," they have adopted as their production policy the principle of "one master with many followers." 2) They practice volume sales with small profit and accumulate profit by the principle of the "snowball effect." 3) They expand production aggressively, following the principle that "if there is no water in the well, we will fetch water from elsewhere." Within a period of just one-half year since these five plants were organized, they have manufactured more than 20 items valued at more than 270,000 yuan, which is more than 1.5 times the total capital accumulated at the time the plants were organized.

Six-Point Proposal

Shanghai FUDAN XUEBAO--SHEHUI KEXUE BAN [FUDAN UNIVERSITY JOURNAL--SOCIAL SCIENCE EDITION] in Chinese No 5, 20 Sep 80 pp 101-104

[Article by Zhang Guangsheng [1728 1684 3932], graduate student majoring in economics: "A Preliminary Study of Surplus Rural Manpower Problem--An Investigative Report Concerning Placement of Surplus Manpower in Various Businesses by the Malu Brigade of Jiading County"]

[Text] An agricultural economic survey was carried out recently in Jiading County [Shanghai]. The cadres and the masses reflected strongly that in order to accelerate the development of rural mechanization, the rural manpower employment problem must be solved first. The phenomenon of surplus rural manpower must be altered quickly.

I.

How extensive is the latent rural manpower in the Shanghai suburbs? How do we make arrangements for surplus manpower during the process of rural mechanization? We can have a glimpse from the changes that have taken place in the Malu Brigade in a period of 2 years, 1978 and 1979.

Malu Brigade was established jointly by the city and the county in 1978 as an experimental focal point for carrying out overall rural mechanization. In 1979 the brigade organized, with the assistance of the county and the commune, various brigade-operated enterprises such as a shirt factory, a lightbulb plant, and a mushroom farm. As a result, significant changes have taken place in the placement and usage of manpower today.

The numbers and distribution of the manpower of Malu Brigade in 1978-79 are shown in the following table, listed by the various types of operations.

(A) (B) (C) (D) (E)

年份	总劳动力	务农社员		务工社员		付业（包括牧业）	
		(F)人数	%	(F)人数	%	(F)人数	%
1978	1,471	993	67.5	408	27.7	80	5.4
1979	1,532	542	35.3	865	56	125	8.2

Key:

(A) Year
(B) Total manpower
(C) Agricultural commune member
(D) Industrial commune member
(E) Sideline (including animal husbandry)
(F) Number

There were 451 fewer commune members engaged in agriculture in 1979 than in 1978, and the percentage of agricultural commune members to total manpower dropped from 67.5 to 35.3 percent. At the same time, the number of commune members engaged in industry increased by 457, from 27.7 to 56 percent. Within a year, the number of commune members engaged in industry increased by 457. How many of these, after all, constitute the surplus manpower created as a result of increased mechanization achieved in 1979? How many were persons who have been harbored in the brigade originally?

When Malu Brigade was newly established in 1978, the level of mechanization in various areas, including cultivation, irrigation, planting, harvesting, threshing, and feed processing, was comparable with the overall level of mechanization in the entire country. The experimental mechanization carried out in 1979 by the Malu Brigade included the following items: Coordination between paddy rice seedling cultivation plants and the mechanical planter in order to eliminate the pulling-planting process. Trial operation of the half-feed combine harvester to carry out a series of simultaneous operations, including cutting, bundling, carrying, threshing, and cleaning the field. Transplantation of cotton from nutrient pots to troughs [1152 2864], carried out by the trenching machine. The trial operation of ditch-digging machinery, oilplant trenching machine, and machinery for application of manure has resulted in improved efficiency. According to an estimate, manpower equivalent to 74 men can be saved from the use of this equipment. This means that of the 457-man increase in the number of commune members engaged in industry in 1979, only 74 constituted the surplus created by raising of the level of mechanization. The other 383 constituted the surplus created as a result of mechanization in the past and have been harbored in the production team. This portion of surplus manpower is 38.5 percent of the total manpower engaged in agriculture. In other words, this amounts to a rate of manpower sheltering of 38.5 percent. The above analysis was based on the premise that the total manpower of the entire brigade in 1979 had been fully utilized. But in reality, the potential manpower of the brigade in 1979 had not been fully utilized. The proof of this is provided by the fact that the brigade was planning to pull out manpower from each production team, and was expecting the number to be quite sizable. The brigade is currently planning to build a spray paint factory [employing] 100 men or so. The existing shirt factory is also carrying out negotiations with the assisting units to introduce another production line which will need 70 men. Although a small portion of the required manpower may come from personnel reassigned

from the existing enterprises under the control of the brigade, the majority of the 170 people must be taken from the production teams. Based on the present status of manpower in various production teams—except for Wangjia and Yangjia production teams, from which no workers can be pulled out—Wujia production team can supply 5 workers and the other 9 production teams can each provide 10 men or so. In some of these production teams, every family has at least one member already engaged in industry. It is difficult therefore to take away additional members without arousing complaints, so nobody will leave the production team for the time being. However, there is in fact still some potential that can be exploited. The 383 persons taken in 1979 added to the 95 planned to be pulled out in 1980 make a total of 478, or 48 percent of the total manpower of 993 who engaged in agriculture in 1978. This figure still has potential for growth. Therefore, it is not an overstatement to say that Jiading County reached the rural mechanization standard in 1978, and that there still is approximately a 50-percent surplus of manpower among those commune members who engage in agriculture. This enormous potential manpower must be fully utilized by increasing the depth as well as the breadth of production activities.

II.

A significant economic effect has been achieved by Malu Brigade by simply placing the surplus manpower harbored by the production teams into industrial production and sideline production.

1) The labor production rate has been increased.

While total agricultural production declined in 1979 (due mainly to the reduction in the cultivated land area and generally poor crops), per capita production of grain, cotton, and oilplant seed increased 52.1, 52, and 57 percent, respectively, over 1978. (See table below.)

(A)务农社员劳动生产率变化：

(B) 年份	(C) 务农劳力总数	(D) 粮食 (G)总产	(H)斤/人	(E) 棉花 (G)总产	(H)斤/人	(F) 油菜籽 (G)总产	(H)斤/人
1978	993	2,294,500	2,411.4	136,600	137.6	135,800	136.6
1979	542	1,988,200	3,668.3	113,400	209.2	116,200	214.4
(I) 两年相比±	−451	−406,300	+1,256.9	−23,200	+71.6	−19400	+77.8
(J) 两年相比增减%	−45.1	−17	+52.1	−17	+52	−14.3	+57

Key:

(A) Changes in the labor production rate of commune members engaged in agriculture
(B) Year
(C) Total manpower engaged in agriculture
(D) Grains
(E) Cotton
(F) Oil plant seed
(G) Total production
(H) Jin/person
(I) Two-year comparison
(J) Percent gain or loss in 2-year comparison

2) Capital for agricultural development has been provided.

Malu Brigade placed 457 workers in brigade-owned enterprises in 1979. Diversified operation production provided total profits of 133,489 yuan, of which 81,915 yuan, or 61.4 percent, was spent on items in support of agriculture. This has not only strengthened the collective economy but also provided the nation with tax income.

3) Commune members' income has been increased.

Since those members who engage in industry do not participate in production team distribution, the total number of labor days of the production team which does participate in the distribution has been reduced by 73,787, and the income of commune members who engage in agriculture has proportionately increased. In addition, the profits created by those commune members who engage in industry are, according to the principle of profit-sharing, in part returned to the production team and distributed to the commune members in the form of cash awards. As a result, while total agricultural production decreased in 1979, the level of distribution to the commune members increased appreciably. On average, this income reached as high as 294.5 yuan, an increase of 60.54 yuan over the 1978 figure. The average production per manpower was valued at 519.38 yuan, an increase of 141.38 yuan over 1978.

Based on the circumstances we encountered during the course of this investigation, we found that the phenomenon of surplus manpower being harbored inside the production team was prevalent all over the county. Basing our estimate on the 50-percent rate of sheltering surplus manpower that was discovered in the Malu Brigade, 77,233 of the 154,466 commune members engaged in agriculture all over the county may be considered harbored surplus manpower. In other words, only 77,233 persons are required to manage the agriculture of the entire county. Let's look at the average cultivated area managed by each commune member engaged in agriculture. After the surplus manpower harbored in the Malu Brigade was pulled out again in 1980, the average cultivated area managed by each commune member engaged in agriculture amounted to 5.4 mu. There are 449,480 mu of cultivated land in this county, so the average area per commune member engaged in agriculture comes to 2.9 mu. We have stated previously that the level of mechanization in the Malu Brigade approaches the average countywide level. Calculating according to a figure of 5.4 mu, the average cultivated area per commune member who engaged in agriculture in Malu Brigade, only 83,237 persons would be required to manage the agriculture of the entire county. As long as the other production departments are capable of absorbing the surplus manpower, the total manpower countywide which can be mobilized immediately is 71,229. (This number is in approximate agreement with the figure based on the amount of surplus manpower sheltered in the Malu Brigade.) If this portion of the manpower can be placed in various other production departments countywide, the labor production rate of the commune members engaged in agricultural production can be raised 50 percent immediately, since there will be no need to increase investment on the agricultural front.

So far, we have discussed the conditions of existing rural manpower. However, we must not lose sight of the following when we contemplate placement of the rural manpower.

1) According to the circumstances of natural population growth in Jiading County from 1960 to 1978, an increase of 5,314 manpower countywide each year can be expected over the next 20 years. Excluding those who go to college, serve in the armed forces, or retire, there will be a net increase in manpower of 4,000 each year.

2) The level of mechanization in Jiading County today is still far below the required level of overall mechanization. Be it farming or animal husbandry enterprise, there is not a single crop or animal whose production process is completely mechanized. Except for plowing, (irrigation) cultivation, and threshing, other work processes of major crops have, in general, not yet been mechanized. There are altogether more than 60 work processes related to handling of major crops such as grains, cotton, and oil plants. The extent to which machinery is used in these work processes is 35 percent for paddy rice, 43 percent for three wheats, 29 percent for cotton, and 20 percent for oil plant. When the level of mechanization for each is one day raised to the level of 85 percent, there will be a large portion of additional manpower which will become liberated.

In 1979, there were 216 seedling pullers and 2,560 seedling planters countywide. Experimental data have proven that seedling planting carried out by machine is not much better than that done by hand. In recent years, the utilization rate of this machinery is no higher than 15 percent. To be sure, the quality of the machinery itself and some technical problems need to be solved. However, the main obstacles preventing wide popularization of this farm machinery in the rural community is the fact that there is no shortage of manpower there. After using planting machinery continuously for 5 years, the Dengqiao Brigade of the Malu Commune discontinued it last year. Yet the same brigade organizes six or seven machinery teams each summer to help neighboring Wuxi and Taibang production teams carry out their planting operation. The cadres of the production team and the commune members are unanimous in their thinking: "Rather than spend currency to feed the machinery with oil, why not let it earn some cash for the commune members? In any case, we have plenty of manpower." We could not help but be alarmed by this kind of situation.

III.

One of the characteristics of our national economy is the large population, 80 percent of which are farmers. We have a large land area, but the area of cultivable land is small. Our foundation is weak. The rate of industrial growth is incapable of completely absorbing the increased manpower in the city, much less absorbing surplus manpower from the rural area on a large scale. Therefore, surplus rural manpower has to find placement in the rural community itself; the problem has to be solved locally.

Based on the circumstances at Jiading, I believe that the surplus rural manpower in the suburbs of large cities may find outlets in the following areas:

1) Commune and brigade enterprises should be developed aggressively by taking full advantage of the favorable conditions of large industrial bases. The commune- and brigade-operated industries of Jiading County started early and developed rapidly

with a good foundation. During the 10-year period from 1970 to 1979, commune- and brigade-operated industries not only brought in profits amounting to 442.14 million yuan but also strengthened the collective economy of the commune and absorbed more than 50,000 manpower, including more than 9,000 last year alone. During the process of reorganization, the large industries in Shanghai dug up latent potential, innovated, and reformed. As a result, many products, especially light industrial products, have "molted" and spread out. Commune-brigade enterprises must satisfy the needs of the people and the demands of the market. They must fully demonstrate the characteristic that "a small ship can turn around quickly." They must fully utilize the rural manpower resources and, according to what local circumstances dictate, adopt either an independent, a joint, or a cooperative form of operation in order to promote the growth of commune-brigade industry one step further.

2) Aggressively develop handicraft products by developing the local characteristics. Yellow grass weavings, embroidery, and bamboo carvings are traditional handicrafts of Jiading County which have been exported and are well received abroad. Production of handicrafts such as wallpaper, potted plants, flowers and birds, mounted pictures, and toys, has a definite foundation. Production of these handicrafts requires a large amount of manual operation and consumes a large amount of labor, but it requires little capital and yields a large profit. Production can be either centrally operated or dispersed and done at each commune member's home. Taking full advantage of the abundant manpower resource, a plan for the development of commune-brigade enterprises in Jiading County suggested that in 1980 the county and the commune, at both levels, should train 3,000 to 5,000 embroiderers; this embroidery force may be expanded to 20,000-30,000 within 2-3 years by the snowballing method. We must say that this is an aggressive measure.

3) Prepare to establish a farmers' housing construction company. The commune members unanimously felt that building houses is a great event in the rural community. To build a house by himself, a farmer must not only spend money, material and labor, but most of all, he must expend a great deal of effort. To meet the needs of rural housing, we must organize various skilled workers scattered all over the village, such as masons, roofers, and carpenters who handle wood as well as bamboo, and try to establish a rural housing construction company which will undertake all rural housing construction work. The company's main purpose would be to serve the needs of rural construction. However, it may also undertake urban construction whenever proper, as well as construction of basic items.

4) Trial operation of an enterprise jointly managed by agriculture, industry and commerce. Last year, Jiading County trial-operated an enterprise, jointly managed by agriculture, industry, and commerce, which dealt in garlic and mushrooms. Various links of the undertaking, from production, procurement, processing, storage, and transportation to distribution, are organically linked, thus realizing "a single dragon" format of operation and successfully transforming rural byproducts into finished products and valuable commodities. Establishing a processing industry and commerce in the rural community not only brought about excellent economic results but also found placement for a portion of the surplus manpower, thus opening up a new route for absorbing surplus rural manpower locally.

5) Simultaneously raise the levels of the five enterprises and aggressively develop multiple operations. Jiading County has a great potential for developing multiple operations. There are 8,000 mu of water surface area all over the county which have yet to be utilized. Besides fish culture, pearl oyster culture may also be developed. Assuming that 2 persons per mu will be required, this industry will be able to absorb 4,000 personnel. According to the standard set by the Ministry of Agriculture and Forestry, there ought to be 30 trees per mu. In Jiading County the average is nine trees per mu. Planting and maintenance of additional trees can also absorb a portion of the manpower. Since there are too many people and too little land, we must look for those production routes which require a large labor force and little or no land area--for example, cultivation of edible fungi such as mushroom, white morel, and houtou [3729 7333]. There is also a great potential in raising domestic fowl. At Dongfeng Brigade, Xuxing Commune, two persons raised 5,000 chickens in 1979 and made a net profit of as much as 13,666 yuan.

6) The rural community may also consider implementing a retirement system and also consider lowering the retirement age. The retirement system adopted in the rural community of Jiading County today sets the retirement age at 65 for men and 60 for women. These retirement ages may be lowered to 60 for men and 55 for women. The small pension is the main reason why most of the commune members are not very eager to retire. The policy should encourage retired commune members to develop family sideline occupations, and the production teams should assist them in developing their family sidelines with materials--especially the development of those sidelines which the collective cannot carry out at once. Let the income from the sideline occupation plus the retirement pension approach the income from the production team before retirement.

Specific ways for placing manpower must be constantly searched for during the course of practice. However, we can be quite sure that systematically placing surplus manpower in such areas as forestry, animal husbandry, sideline occupations, and fishery by aggressively developing multiple operations and establishing commune-brigade operated industries, commerce, processing industries, construction industries, service industries, etc. do not constitute "abandoning agriculture for commercial operation." It may be said that, to some extent, the objective need for rural mechanization can be created only when there is a shortage of rural manpower. Mechanization can thrive only under such circumstances.

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FIELD EXPERIMENTS, CONTROLLING ERRORS RESEARCHED

Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 4 20 Apr 80, pp 22-27

[Article by Zhao Renrong [6392 0088 6954], Di Wanxuan [5049 1238 5503] and Xu Jin [1776 6930]: "Field Experiments and Statistical Methods"]

[Text] In January of this year, the Ministry of Agriculture asked the Shenyang Academy of Agriculture to conduct a training class in national biological statistics and field design. We have arranged with Professor Zhao Renrong [6392 0088 6954] and lecturers Di Wanxuan [5049 1238 5503] and Xu Jin [1776 6930] of the Shenyang Academy of Agriculture to write a popular lecture on "Field Experiments and Statistical Methods" for publication starting from this issue. If the readers encounter any questions in the course of learning and practice, please write and tell us.

——Editor

Field Experiment

Field experiment is the basic form of scientific experiment in agriculture. All scientific experiments in agriculture using the field as the environment and crops as the subject of the experiment are called field experiments.

The results of field experiments are influenced by the crops themselves, external natural conditions, level of management and cultivation and other various factors. Such experiments are complex. Because there are few factors which can be controlled, experimental errors are easily made, thus reducing the accuracy of the experimental results. Therefore, how to reduce experimental errors and improve the accuracy of the experimental results become the central questions which must be considered in field experiments.

Chapter I. Controlling Experimental Errors

Improving the Accuracy of Experiments

The results of field experiments should be accurate and reliable. This means the errors of the experiment must be small, and the comparisons made between experimental treatments must be accurate. Only by controlling experimental errors can the accuracy of the experiment be improved.

I. Reasons that Cause the Difference

Regardless of the type of field experiment, the purpose is to search for the variety that produces the greatest increases in yield or the measure of cultivation. Therefore the different treatments (or varieties) set up by the experiment should manifest visible differences. Actually, the results of each treatment in any field experiment will differ to varying degrees, some are manifested in the yield, some are manifested in the height of the plants, thickness of the stems, resistance to disease, resistance to lodging, growth periods and various morphological and physiological characteristics. Analysis of the results of field experiments shows that the causes that create the differences among the various treatments (or varieties) are the following:

1. The nature of the productive abilities of the treatments (or varieties) is different. For example, hybrid sorghum and hybrid corn generally produce a higher yield than local varieties. In phosphorus deficient soil the application of phosphorous fertilizers will produce a visible increase in yield as opposed to no application of phosphorous fertilizers. This shows that the nature of the yield of hybrid varieties and local varieties and the nature of the yield of applying and not applying phosphorous fertilizers are different.

2. The effects brought about by the difference in soils. Soil is the basic condition in field experiments. If the soil of the experiment has even fertility and the conditions are consistent, then the experimental results will clearly show the differences in the nature of each treatment and the results will be accurate and reliable. Yet actually the soils of each experimental region are all different in degrees. The differences are mainly due to the soil's formation processes and are caused by human productive activities, such as topography, soil texture, soil nutrients, moisture, methods of planting and fertilization, amount of fertilization, and the different types of forecrops. These differences are widespread, absolute, and there is no completely even and consistent soil. Even land that seems to be very even on the surface will have some differences.

3. Differences caused by various other factors. For example, the duration and quality of field operations in the experimental area cannot easily be controlled in exactly the same manner. Experimental materials (including seeds and seedlings, plants etc) cannot be completely consistent, therefore germination of the seeds, the speed of budding, the growth conditions in the field will be different. In addition, there are also various causes that come about by chance (also called chance factors), such as trampling by animals during the period of field operations in such area, the degree of damage by diseases and insects and microclimates are not entirely the same, and these factors will produce large or small effects upon the experimental results.

4. Human errors. Because of a poor grasp of the theory and the method of the experiment, errors frequently occur in work. For example, a poor field selected for the experiment will have soil that varies greatly. Mistakes in the design of the experiment (such as the lack of repetition in small area experiments, only one small area is planted, planting only one or two long ridges for one treatment to conduct comparisons etc), taking too few samples or taking samples that are not representative, negligence in work, recording wrong numbers, misreading the scale, etc will all create big errors and seriously affect the accuracy of the numerical data of the experiment.

II. The Origin of Experimental Errors

Of the several reasons that bring about differences mentioned above, the first is the purpose of field experiment itself which requires that the greater the difference among the various treatments (or varieties) the better for selecting the superior and discarding the poor and for continuously increasing the yield. The second is the difference in the soil and the third, i.e., the differences caused by other various factors, are interfering factors in the experiment, and are the major source of experimental errors. If they are not controlled and eliminated, greater experimental errors will be created. The occurrence of errors often interferes with our correct judgment of experimental results, even causing us to make erroneous judgments and making contrary conclusions. Therefore, the smaller the experimental errors the better. But, because field experiments are affected by natural factors and chance factors to a greater extent, some experimental conditions (such as soil, experimental materials, quality of operations) can only be controlled as much as possible and it is very difficult to control them completely and to make them absolutely consistent. Therefore all experiments have different degrees of errors that affect the accuracy of the experiment. Only in relatively strict and accurate experiments will the error be small, and if the opposite prevails, the errors will be greater.

Human errors are mistakes of work and are not experimental errors. They should be completely eliminated. Otherwise the experimental results will frequently have to be scrapped.

II. Methods of Controlling and Eliminating Experimental Errors

Analysis of the sources of experimental errors shows that the following ways can be considered in controlling and eliminating experimental errors and increasing the degree of accuracy of the experimental results.

1. Conscientiously select a good experimental field according to requirements and exert all efforts to eliminate differences in the soil at the root cause.

2. Have a rational experimental design, use small area experimental techniques and corresponding statistical methods, further control and reduce the differences in the soil, and exert all efforts to reduce errors caused by other conditions.

3. Except for the differences in the measures for each treatment (varieties) for experimental comparison, all other conditions of the experiment should be even

and consistent as much as possible. Therefore experimental materials of the same quality must be used and each field operation must be performed according to the time and quality required by the experiment.

4. Inspect the conditions of growth in field experiments and the time and the standards must be uniform. When measuring the yield, samples must be representative, even and rational and the amounts should be sufficient.

Chapter II. Design of Small Area Experiments

I. Determine the Content of the Experiment

Before conducting an experiment, a decision based on the requirements of the experimental task must be made to decide whether to perform a single factor experiment or a multiple factor experiment, and then the experiment should be designed separately.

Single factor experiment is to study a single factor (also called factor) in one experiment. This factor can be treated in several ways for comparison. For example, to compare the results of increased yields of several new varieties of corn, a contrast with the local original varieties can be made. This experiment requires only the study of one factor of the varieties. The new variety and the original variety are the several treatments of this experiment. Single factor experiments can generally be divided into variety comparison experiments and cultivation experiments. Multiple factor experiment is the simultaneous study of two or more than two factors in one experiment. Each factor has several levels (or called degrees, ranks). The factors are combined at different levels. This constitutes the treatment combinations of this experiment. For example, when studying the results of increased yields of a certain superior wheat variety under different density and fertilization conditions, a multiple factor experiment can be conducted including density and the amount of fertilization as the two factors. If there are three levels of densities, they can be designated dense, medium and sparse. If the amount of fertilization also has three levels, they can be designated as high, medium and low. Thus, this experiment will have nine treatment combinations of dense-high, dense-medium, dense low, medium-high, medium-medium, medium-low, sparse-high, sparse-medium, sparse-low (the meaning of "treatment combinations" in multiple factor experiments is similar to that of "treatment" in single factor experiments). This type of experiment can study the average effect of one factor at different levels of another factor and it can also study the mutual reaction between two factors to search for a comprehensive effect of the factors. Therefore multiple factor experiments are a means to provide a complete set of measures for the "superior variety and superior method of planting." But the number of factors to be studied should not be too large to prevent the experiment from becoming overly complex and as a result the experimental results cannot be analyzed.

The basic requirement of the design of field experiments is simplicity and consistency of the conditions. Consistency of the conditions means that except for the factor which is to be compared (such as the varieties in variety experiments and certain techniques and measures in cultivation experiments), all other

conditions must be entirely consistent and experimental errors caused by differences of various conditions should be prevented or reduced as much as possible so that the experimental data will be accurate and reliable and the experimental conclusion will be correct and error free. Simplicity means that the content and design of the experiment should be suited to the local production level, the measures should be simple and easily performed so that the experimental results can be easily accepted by the broad masses and can be popularized over large areas.

II. Key Points in the Design of Small Area Experiments of Single Factors

1. The number of treatments should not be too numerous. Treatment is the content to be studied and compared in the experiment. The number of treatments should be based on the goal of the experiment. The key points should be prominent and 3 to 5 should be appropriately set up and at most they should not number over 10. A more visible demarcation should be set up among the treatments. For example, in an experiment of the sowing amounts of wheat, each treatment must be different by at least 5 jin, lesser differences will necessitate more treatments, increase the burden of land, manpower and materials and make it difficult for field operations and survey and recording to be consistent, thus easily causing experimental errors, and at the same time, visible differences cannot be easily seen among the treatments.

2. The control area must be set up rationally. Field experiments must have a control treatment area to serve as the standard for comparisons. If the control is not set up rationally, comparability is lacking, the experiment will fail to produce a correct conclusion. Therefore, the control must be set up rationally. For example, in variety experiments, the locally produced superior variety planted over the largest area in the locality should be selected as the control. New varieties which have just been test planted should not be used as the control, and separate controls should be set up for early, intermediate and late maturing varieties. The quality of the seeds of the control varieties should be the same or similar to that of the new varieties.

In cultivation experiments and other kinds of experiments, the techniques and measures most commonly used in production at the locality must be used as the control. In the experiments of soaking seeds in chemicals or spraying hormones and foliage sidedressing, such treatments as soaking in pure water or spraying with an equal amount of pure water should be performed as the control so that the effects of soaking seeds in chemicals or spraying hormones and foliage sidedressings can be correctly determined.

3. The area and the shape of the small area of experiments should be appropriate. In small area experiments, generally there are 5 to 10 treatments and each small area is sown for each treatment. The area of the small area should generally be from 30 to 100 square meters except for the primary materials in variety experiments and selection and determination experiments. One cannot simply plant only several square meters or one or two ridges. This is because the areas are too small, the differences in the soil are greater and it is difficult for the experimental results to be accurate. The area of the small area should be determined by the soil condition, the type of crop, the content of the

experiment, the amount of seeds. Where the soil is relatively even and consistent, the area of the small areas can be smaller, otherwise it should be slightly larger. The area of small areas in variety experiments is smaller and the area of small areas in cultivation experiments is larger. When the number of seeds is small, the area of the small areas should be smaller, and when the number of seeds is sufficient, the area can be larger. Determination of the area of the small areas can be made in reference to Table 1 and grasped in a versatile manner according to actual situations.

Table 1. Reference Table of Areas of Small Areas in Field Experiments of Crops

Crop Content of Experiment	Paddy rice, Wheat	Corn, Sorghum, Soybeans, Cotton
Variety experiments:		
Primary material	1 - 5	5 - 15
Selection and determination	3 - 10	10 - 25
Comparison of varieties and regional experiments	20 - 100	30 - 100
Cultivation experiments:		
General experiment	20 - 100	60 - 150
Interplanting, companion cropping, multiple planting experiments	100 - 333	200 - 333
Mechanized planting and cultivation experiment	200 - 333	667 - 1,334

The shape of the small area should best be rectangular. This is because the differences in the soil of rectangular shaped small areas are relatively smaller, and it is more convenient for sowing, field management, observation and recording. The ratio of the length and width of the small area generally should be 3:1 to 10:1 and this can be used in a versatile manner but an appropriate number of ridges and necessary protective rows must be assured in each small area. Some experiments, such as interplanting and companion cropping experiments, chemical spraying experiments, irrigation experiments, mechanized cultivation experiments, require more ridges and an approximately square shape can also be used.

4. Setting up repetitions in the experiment. In the experiment, simultaneous planting of all small areas lined on one piece of land is called a repetition. Simultaneous planting of all small areas lined on another piece of land is called a second repetition. They can be ordered as the first repetition, the second repetition,.... The number of repetitions is the number of plantings of each treatment on the entire experimental field. Each repetition includes several small areas, therefore repetitions are also called area groups. To overcome the experimental errors caused by the uneven fertility of the soil and to rationally estimate the experimental error and to statistically analyze the experimental

results, the experiment should set up several repetitions. The averages of several repetitions of the treatments are compared. Generally, the small area experiment is repeated three to four times. The repetitions should be zoned according to the fertility of the soil and the elevation of the fields. The principle of zoning should be followed, i.e., the direction of the rows in the small areas should be parallel to the direction of change of fertility of the soil and the direction of the small area groups should be perpendicular to the direction of change of the fertility of the soil so that the soil and other conditions in each repetition will be as consistent as possible. There can be appropriate differences between different repetitions. A path of 0.5 to 1.5 meters should be left between repetitions to facilitate field operations and observation and recording (see Figure 1).

First repetition	A	B	C	D	up (or infertile)
Path					Direction of slope of
Second repetition	C	A	D	B	the soil
Path					down (or fertile)
Third repetition	D	C	B	A	

Figure 1. The correct design of the zoning of repetitions according to the direction of the slope or distribution of soil fertility in small area experiments of varieties of corn

5. Field arrangement in small areas. The distribution of each small area of treatment in the field is called field arrangement. The small area single factor experiments generally use the following three arrangements:

(1) Random arrangement: Random arrangement is when each treatment does not follow any order in each repetition but the position is determined at random. Random arrangement is better than ordered arrangement (where each treatment is arranged in the same order during each repetition). It gives each treatment an equal opportunity in each repetition and each treatment is evenly distributed in each of the repetitions, reducing experimental error. At the same time, it uses less land than contrast arrangement because each repetition has only one control area and less land is being used. Small area experiments using random arrangement are also called random area group experiments. Random arrangement is suitable for variety experiments and various types of cultivation experiments. In variety experiments, when the participating varieties are more numerous, they can also be separated into several groups according to early maturity, intermediate maturity and late maturity and several random area group experiments can be conducted.

The actual method of random arrangement is as follows: Taking the corn variety experiment as an example, there are eight varieties, the experiment is repeated three times, the varieties are numbered 1,2,3,4,5,6,7, and 8. Of these, No 8 is the control variety. In the arrangement, three repetitions are zoned according to the conditions of the soil. Each repetition is divided into eight small areas. Then the eight varieties are written on eight pieces of paper for

drawing. The first repetition is to be arranged first. The varieties picked at random will be planted from left to right in each small area consecutively. For example, if variety No 7 is picked first, it will be planted in the area at the left. If variety No 2 is picked as the second, it will be planted in the second area, and so on. The second and third repetitions will also be arranged accordingly. If a variety happens to be arranged in the same position in two or three repetitions, partial adjustment can be made so that each variety can be distributed more evenly (see Figure 2).

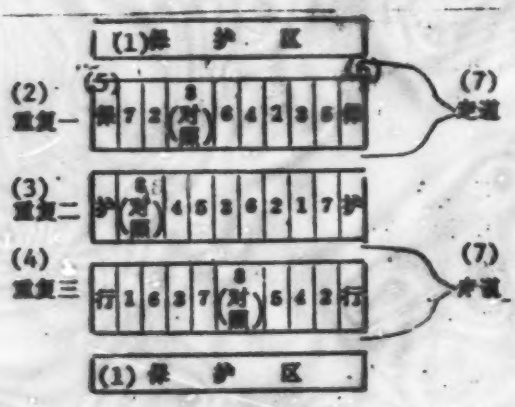


Figure 2. Randon arrangement in small area experiments of corn varieties

Key:
(1) Protective area
(2) First repetition
(3) Second repetition
(4) Third repetition
(5) Protective row
(6) Control
(7) Paths

(2) Contrast arrangement: Contrast arrangement is to plant a control area right next to each small area of varieties to be tested. Comparison is made between each of the varieties and their neighboring control area. The contrast arrangement generally requires only two repetitions. Each repetition's individual treatment can also be arranged at random. In the contrast arrangement, because there are many control areas, more land is used (the control areas occupy 1/3 more land in the entire experiment), and the amount of field work is increased, therefore it is not as simple as random area group experiments. Contrast arrangement is suitable for variety comparison experiments.

(3) Interspersed contrast arrangement: Interspersed contrast arrangement is arranging the varieties (or treatments) in numerical order, and a control area is set up after every four or more treatments. This method has less control areas than the contrast arrangement and less land is used but the experimental results are relatively imprecise. It can be used when accurate yields are not needed. For example, in the observational nursery at the beginning period of variety experiments, there are a dozen to several dozen varieties or lines whose manifestations of the length of the growth periods at the locality, the seriousness of diseases and insect pests, the demands for fertilizers and water, the

strength of the ability to resist adverse conditions all have to be preliminarily observed. The interspersed contrast arrangement can be used. This type of arrangement does not require repetitions.

The field arrangement of contrast arrangement and interspersed contrast arrangement are shown in Figures 3, 4.

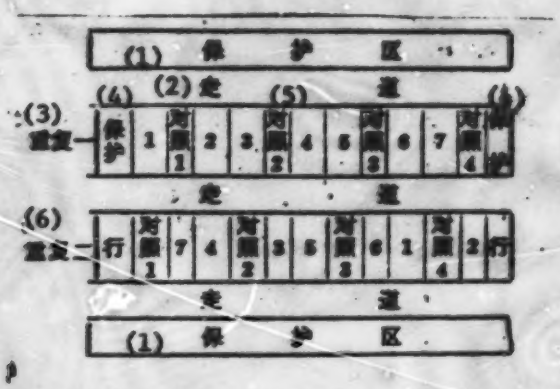
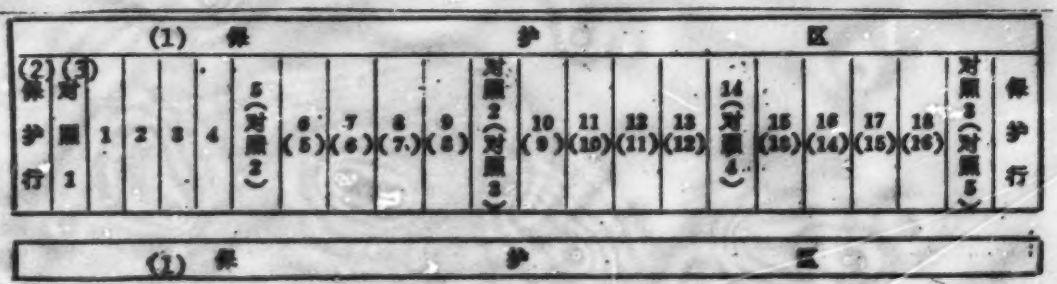


Figure 3. Contrast arrangement in small area experiments of corn varieties

Key:
(1) Protective area
(2) Paths
(3) First repetition
(4) Protective row
(5) Control
(6) Second repetition

Remark: In the diagram, 1,2,3,.....7 are numbered varieties.



Remark: In the diagram, 1, 2, 3.....18 are numbered varieties. The numbers outside the parentheses designate the arrangement of the control areas following every nine varieties. Numbers in parentheses designate the arrangement of the control areas following every four varieties.

Figure 4. Interspersed contrast arrangement in observation nurseries of varieties

Key:
(1) Protective area
(2) Protective row
(3) Control

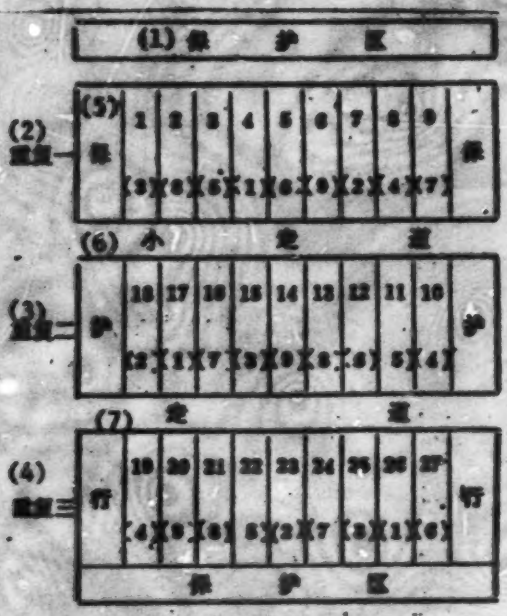
6. Setting up protective rows and separating zones and eliminating border influences. In variety experiments or cultivation experiments, the small areas on the two sides or the border rows of a small area frequently have special conditions and the growth of plants is sometimes good and sometimes poor. These manifestations are called border influences. For example, in the variety experiments of corn, tall and short stemmed varieties are planted together, the border row of tall stemmed varieties have good aeration and light permeability, conversely, the border row of short stemmed varieties are suppressed. In irrigation and fertilization experiments, the border rows of neighboring small areas frequently affect each other. Therefore measures must be taken to eliminate border influences. Besides separating tall and short stemmed varieties into groups for the experiment, more protective rows can be planted along the two borders of small areas. In irrigation experiments, a separating zone should be set up beside the irrigated small area. The yields of the protective rows and the separating zones are not included.

III. Key Points of the Design of Multiple Factor Small Area Experiments

The key points of the design of multiple factor small area experiments are basically the same as those of single factor experiments. The number of treatment combinations of multiple factor experiments must not be too numerous. Reducing the amount of work can be done mainly by reducing the number of factors and the number of levels of each factor. Control areas also need to be set up in multiple factor experiments. Each factor should include one contrast level. The treatment combination formed by each factor with the contrast level is the control area. The area of the small area experiments of multiple factors of each crop should not be smaller than that of cultivation experiments, the number of repetitions should be two to three times. The field arrangements of the small areas of multiple factor experiments are of the following two types:

(1) Random area group design: Each level of each factor is coupled with the other level of each factor to form several treatment combinations. Then they are numbered and drawn at random. They are then arranged at random in each repetition (the method is the same as that for single factor experiments). For example, there are three corn varieties A, B, and C. Each has three amounts of fertilization, high, medium and low, then there are these numbered combinations: (1) A-high, (2) A-medium, (3) A-low, (4) B-high, (5) B-medium, (6) B-low, (7) C-high, (8) C-medium and (9) C-low, a total of nine treatment combinations. These are grouped in areas at random and three repetitions are set up. The field arrangement in the small area is shown in Figure 5.

(2) Split area design: When one of the experimental factors is more important (i.e., when the factors can be ordered as primary and secondary), a split area design can be used to increase the degree of accuracy of analysis of the primary factor. Split area design is to mark out several large zones (called whole zones) based on the number of the levels of secondary factors in each repetition, then several small zones (called split areas) within each whole zone can be marked out according to the number of levels of the primary factor. It is a design method based on ordering of the primary and secondary factors. The actual procedure is to mark out several small areas according to the number of treatment

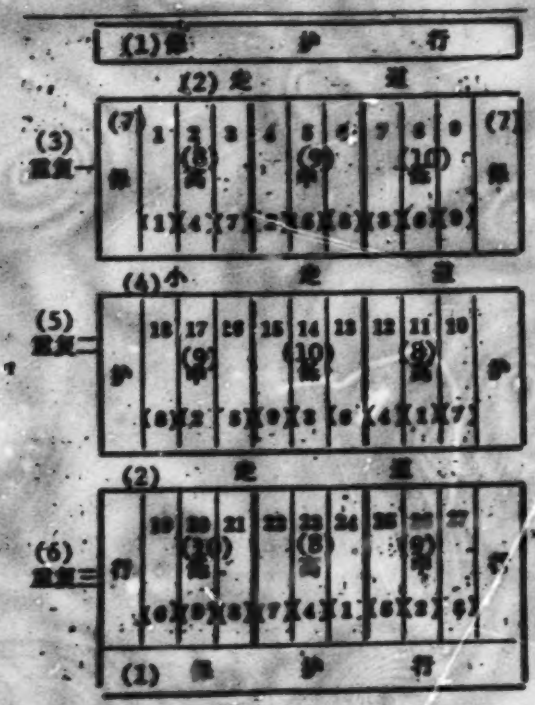


Remark: Numbers of the top row designate the numbers of the small areas, the numbers of the bottom row designate the numbers of the combinations of treatments.

Figure 5. Field arrangement in the design of small areas of random area groups in a multiple factor experiment

Key:
(1) Protective area
(2) First repetition
(3) Second repetition
(4) Third repetition
(5) Protective row
(6) Small paths
(7) Paths

combinations but each level of each secondary factor is arranged once at random within the whole zone (i.e., combining several small areas into a large area), then each level of the primary factor is arranged once at random within the border of each whole zone. Still using the experiment of the varieties of corn and the amount of fertilization described above as an example, and taking variety as the primary factor, the field arrangement of the small areas is shown in Figure 6.



Remark: In the diagram, the top row of numbers designate the numbers of the small areas, the numbers of the bottom row designate the numbers of the combinations of treatments, the double line is the dividing line of the whole zones.

Figure 6. Field arrangement of the design of small areas with split areas in a multiple factor experiment

Key:

(1)	Protective area	(6)	Third repetition
(2)	Path	(7)	[illegible] row
(3)	First repetition	(8)	High
(4)	Small paths	(9)	Medium
(5)	Second repetition	(10)	Low

Regardless of whether it is a single factor experiment or a multiple factor experiment, after the design of the experiment has been completed a written plan for the experiment should always be written and field planting diagrams should be drawn.

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QUICK PRESERVATION OF FOREST RESOURCES URGED

Guangzhou NANFANG RIBAO in Chinese 4 Sep 80 p 3

[Article by Zhou Yongsheng [0719 3057 3932]: "Quickly Save Guangdong's Forest Resources"]

[Text] Forests are the foundation of agriculture: they regulate climate, conserve water resources, save water and soil and increase soil fertility. In view of the fact that Guangdong's forest resources are now nearing the point of exhaustion, a matter of prime importance which Guangdong's agricultural construction should grasp in the 1980's is afforestation and tending young and middle aged forests, and agricultural, water conservancy, fertile soil and agricultural mechanization construction should all act together to build and protect forests. The important questions which Guangdong's forestry urgently needs to resolve now are:

1) Establish a provincial corps for the fundamental ownership of forest and mountain rights and issue certificates of forest and mountain rights; establish a system of forestry production responsibility to unite the protection of forests and the interests of the masses who live in forest zones; establish policies for privately owned forests and forests for firewood and charcoal to facilitate "delimiting a small area to protect a large one"; reaffirm the longstanding and effective policy on planting forests that "whoever creates, owns: the state, the collective and the individual are in unison"; perfect Guangdong's laws and organizations for creating and protecting forests to stop the wanton cutting and accelerate afforestation as quickly as possible.

2) Formulate and unify a series of policies and rewards to promote the development of Guangdong's forestry industry and raise the production and standard of living of the people in the forest zones; eliminate all policies and restrictions which are not favorable to the development of forestry and the diversification of forest zones; implement a policy to keep forest product prices abreast of food prices; thoroughly change the chaotic situation in Guangdong's forestry administration.

3) Resolve in an appropriate fashion the problem of fixed quotas for marketing staple foods supply in forest zones and consider reducing the public grain mission of forest zones.

4) Adopt resolute measures to reduce Guangdong's timber production mission and strictly control cutting (in the next 5 years, cutting should be limited to 1-1.5 million square meters).

5) Formulate short, medium- and long-range development plans for Guangdong's forestry and firmly and thoroughly carry out policies centered on forest management to develop forestry and use timber and establish and operate economic forests, water resource forests, shelter forests, turning the "four sides" green forests and farmland forest networks.

6) Raise special funds to accelerate the building of Guangdong's forest roads, protective organizations, forestry mechanization and small-scale hydroelectricity, and in a planned manner emphasize investment in establishing a group of state-run forestry bases.

7) Conscientiously strengthen scientific research in forestry (especially to improve comprehensive use of forests and strengthen research in wood substitutes), improve the political, economic and social position of forestry and forestry science personnel.

If the serious situation of the near exhaustion of forest resources and the deterioration of forestry structure in Guangdong can be improved in the 1980's, then in 1990 Guangdong's forest area will be over 250 million square meters and the rate of cover will be over 40 percent, so Guangdong's future agricultural development will have an excellent ecological foundation.

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SUGARCANE, SILKWORM COCOON OUTPUT POTENTIAL DISCUSSED

Guangzhou NANFANG RIBAO in Chinese 5 Sep 80 p 3

[Excerpt] The flatland area in the Zhujiang Delta, an important comprehensive area of diversified cash crops and at the same time an important base for commodity grains, very much needs specialized study to adopt some feasible policies and measures and to formulate developmental plans. Sugarcane should be studied as a cash crop. In 1979 (not including the short season which goes beyond the end of the year) Guangdong produced about 8 million tons of sugarcane and produced 980,000 tons of sugar. The Zhujiang Delta (including Foshan and Huiyang) produced 3.192 million tons of sugarcane and 450,000 tons of sugar, being 40 percent and 41 percent of the province's total output of these items respectively. Furthermore, the output per mu of sugarcane and the output of sugar is very high. Calculated on the basis of 1979, in the entire province, it took an average of 2.65 mu to produce 1 ton of sugar, but in the Zhujiang Delta it took on the average 1.7 mu and in the highlands it reached 1 ton per mu. These are superior conditions for developing the sugarcane and sugar extracting industries. Nationally, 1979 sugar production was about 2.5 million tons, but consumption reached 3.5 million tons, a shortfall of about 1 million tons. In 1979 we imported 1.5 million tons of sugar which, calculated at present prices, required an expenditure of over US $1 billion in foreign exchange. In view of this, the leadership comrades of the Central Committee this year proposed that South China develop sugarcane, and if after a certain number of years it reached the point where it was not necessary to import sugar, it might even be possible to export some and import some food grains, thus resolving this area's need for grain. Guangdong should courageously pick up this task. Guangdong Province has a sugar-extracting capability of over 1.3 million tons, but present facilities use rate is only 60-70 percent, so adding another 300,000 tons would not be difficult. Guangdong now has 3.7 million mu planted in sugarcane, though the record is as much as 4.7 million mu. The Zhujiang Delta would only have to increase sugarcane planted by 500,000 mu to add another 300,000 tons of sugar. The key question is food grains. The conditions for solving this problem already exist, but there should be some very good planning. There are also the silkworm and mulberry questions. Silkworm cocoons and raw silk are traditional exports of the Zhujiang Delta. Eight silkworm crops can be produced each year, which is something other provinces cannot do. The record for the highest output of silkworm cocoons in Guangdong was as high as 1.5 million dan, but the output in 1979 was only 410,000, less than one-third of the record level. This is mainly a food grain question, too. Related to silkworms and mulberries are production of hamaas and pond fish. The time has come when it is urgently necessary to formulate development plans for these crops.

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PLANTING MULBERRY TREES, RAISING SILKWORMS STEPPED UP

Guangzhou NANFANG RIBAO in Chinese 8 Sep 80 p 1

[Text] This year the silkworm cocoons of the first to fifth crops increased with each crop. By the end of August, the total amount of silkworms accumulated in the province was over 315,000 dan, an increase of 17 percent over last year, including 76,100 dan from the fifth (August) crop, which was an increase of 49 percent over the same period last year and set a new record for the highest level of fifth crop silkworm cocoon production in the country. The important silkworm cocoon area of Shunde County produced over 150,000 dan in the first to fifth crops, including a fifth crop output which increased 60.6 percent over last year.

Guangdong Province is one of the nation's four largest silkworm producing areas and leads the nation in the number of silkworm crops and output of silkworms per mu of mulberry trees annually. This year, areas of the province have enhanced this superiority and have made planting mulberry trees and raising silkworms an important means of making money. At the same time that mulberry groves are being expanded, old groves are being actively managed and efforts are being made to raise output per unit of area. The volume of the first silkworm cocoon crop of the year increased 21 percent over the same period last year.

After this, the cadres and masses of the silkworm producing areas continued to exert themselves to plant and fertilize mulberry trees and carefully managed them, and with the addition of average rainfall this year, the mulberry groves produced more with each crop to establish a foundation for continuing to increase silkworm cocoon production. In the process of developing silkworm cocoon production, many government and party leaders of new silkworm producing areas got into survey and study, summarized and expanded local advanced experience of "promoting grains with silkworms and getting good harvests in both grain and silkworms," and promoted the development of silkworm and mulberry tree production.

The Lianjiang County committee appointed a deputy secretary to take charge of silkworms and mulberry trees. The area in mulberry trees in the county increased from last year's 500 mu to the present 6,400 mu. The output of just the first five crops of silkworm cocoons this year surpassed last year's total output of cocoons by 1.3 fold. Now, mulberry trees at various locations about the province are growing very well, and silkworm starts supply has fallen short of demand.

Thus concerned provincial sections are helping localities adjust surpluses and shortages, and Shunde County even sent someone specially to Zhejiang to ship back by air silkworm starts to satisfy the needs of expanded production.

RESPONSIBILITY SYSTEM IN AGRICULTURE DISCUSSED

Hangzhou ZHEJIANG RIBAO in Chinese 2 Oct 80 p 1

[Article: "Need for Further Enhancement and Perfection of Production Responsibility System in Agriculture Pointed Out by Comrade Tie Ying [6993 3841] in Speech to Provincewide Propaganda Work and Mountain Areas Work Conference"]

[Text] On 25 August, Zhejiang Province CCP First Secretary, Comrade Tie Ying, expressed some views on the further enhancement and perfection of the responsibility system in agriculture in a talk given to the provincewide Propaganda Work and Mountain Areas Work Conference. This portion of his talk has been excerpted for publication below.

Comrade Tie Ying said in his report that since the Third Plenary Session of the 11th Party Central Committee, by following the spirit of the two Central Committee documents on the development of agriculture, through diligent adherence to implementation of a series of party policies for rural villages, by emphasizing consistency in the system of ownership, and by enhancing the system of responsibility, very good results have been obtained. Throughout the provinces, the "three echelons of ownership with the team as the foundation" as the basic system for people's communes is stable; agricultural production has developed rapidly in the overwhelming majority of places, and the collective economy has become increasingly consolidated. During last winter and this spring, CCP committees at every echelon have personally acted to survey and study, to readjust the size of some production teams, and to establish and perfect various forms of systems of responsibility for production in each industry, and great progress has been made in the administration and management of communes and brigades. However, some problems continue to exist, as for example, the unstable or unsuitable size of a minority of production teams. In some places the appearance of contracts with households for guaranteed production or the distribution of drylands to households has aroused controversy among cadres and the masses. In the management of the labor force, many places have imposed killing restrictions for a long period of time. Where there should be a dispersal of administration, dispersal of administration has not been permitted; and where labor should be permitted to work outside of farming, it has not been permitted to do so. In other places, however, there is no management over the labor force's movements; it is allowed to drift. Restrictions have been too extreme for the buying, processing, and transportation for sale of agricultural sideline products. Communes and brigades have an obligation only to produce numerous agricultural sideline products; they have no rights in how they will be disposed of. Every jurisdiction should conscientiously investigate and study these problems,

properly analyze local realities, fix work programs by adjusting methods to the local situation, adroitly guide action according to circumstances to carry out tasks, conscientiously do a good job, and resolve contradictions. Resort to coercion and commandism, and methods that rely on repression and acting tough will not do. Trying to dodge conflicts and just letting things drift along without doing anything about them is no good either.

Comrade Tie Ying said that for rural villages to prosper, main reliance will have to be placed on collective strength, with across-the-board development of agriculutre, forestry, livestock raising, sideline occupations, fisheries and industrial production, the launching of diversified enterprises, continuous increases in income and improvement in the life of the masses. The main energies of all our echelons of leadership should be put into how to further consolidate and accelerate development of the collective economy and into taking maximum advantage of the superiority of the collective economy. We do not need, nor should we promote, a provincewide contracting for guaranteed production with individual households. In an extremely small minority of places where little development of production has occurred since cooperativization, and where the people's living standards have not improved, the use of contracts with households for guaranteed production as a temporary expedient in overcoming difficulties is permissible. But contracting with households for guaranteed production cannot become the sole means of overcoming difficulties. Contracts with households for guaranteed production most certainly is not the future direction of development for rural villages. Those who say that "contracts with household for guaranteed production and division of the fields for individual farming is inevitable" are mistaken. This point must be clearly stated to the broad masses of peasants. To say this is not to say that our province does not want to liberalize policies; it is to say that we will proceed from realities to study the question of a liberalization of policies. The so-called liberalization means reform of those irrational regulations that fetter the development of productivity so that production relationships will suit the character of production forces. Whatever needs liberalization and whatever needs changing will be done, to be sure, on the basis of realities in the local area and in the local units, with the adaptation of general methods to specific situations. In our consideration of the size of production teams, the form of systems of responsibility for output and methods of distribution, we must first consider the level of development of production forces, and on the basis of needs for development of agriculture, forestry, livestock raising, sideline occupations, and the fishing industry, make investigation and study to formulate policies and methods that are geared to actual circumstances. At every echelon, comrades in positions of responsibility must dare to seek truth from facts, and proceed from realities to implementation of the party's policies. Throughout the province, we must distinguish individual areas of different kinds to make formulations on major policy problems, and at the same time, it is necessary to require each place to do things on the basis of local realities and not standardize or "cut all problems with the same knife."

In his report, Comrade Tie Ying pointed out that during this winter and next spring major action is to be taken in rural villages for the improvement of administration and management and the strengthening of the system of responsibility. He also made known some views on specific policy questions.

1. The Problem of the Size of Production Teams

Briefly, the size of the overwhelming majority of production teams in Zhejiang Province is proper and should be kept as is. In cases where the size is not proper and where the masses have called for a restructuring of the production teams, suitable restructuring should be done where it benefits production and where it benefits unity. Stability and restructuring are apparently contradictory, but in fact are one. To talk only about stability without solving conflicts that actually exist is to have no stability. Proper restructuring to solve conflicts permits stability. On this issue, we have the lessons of experience. If you do not take account of realities, put things together that should not be put together and separate things that should not be separated, and turn everything topsy turvy, you are bound to suffer. To suppose upon hearing of the division of a team that "division into tiny teams" is meant and that such is not allowed and will not be accepted is wrong, but to allow the masses to make divisions spontaneously, dividing in any way they see fit and abandon leadership is also wrong. We cadres must take the initiative in explaining reason to the masses and discuss with the masses ways of resolving conflicts to put problems to rest through leadership. For example, in mountain regions where the land is vast but people scant and people are dispersed, the size of the production teams has to fit the characteristics of the mountain area. On the plains there are also a small number that are too large in size, making for difficulties in management and causing problems for production. When a majority of the masses urgently call for division of the teams, after the autumn harvest is in and before winter planning is begun, and following approval, they may be divided through leadership. In cases where production teams have been already divided without authorization, where the size is basically suitable, reasonable, and freely desired by the masses, approval should be given as soon as possible, and they should be helped to select cadres, open accounts with banks and set up accounting systems, and establish various management systems to help get on with production. In a small number of cases where division has made production teams too small, seriously hurting production, a good job must be done in mobilizing the masses to put things right of their own accord. In some production teams with stability in key cadres and where agricultural sideline production is going along well, but where the masses call for division of a team, principally because it is too large with numerous conflicts in administration and management resulting, the team may be divided into vocational teams (including agricultural teams and sideline production teams) in a system of responsibility whereby contracts are made with the teams for guaranteed production. In the process of restructuring the size of production teams, preservation of collective property and satisfactory arrangements about pertinent policy questions has to be emphasized; destruction of mountain forests, machinery, equipment, and buildings cannot be allowed.

2. Problems About a System of Responsibility for Production

We must continue to strengthen systems of responsibility for production in all industries. The form of the system of responsibility may be contracts with small sections, calculation of remuneration for fixed quotas, or it may be a work contract for guaranteed production, or calculation of remuneration for joint production, with the adaptation of a general system to specific situations with flexibility and diversity and no "one and only" approach. So long as the principles of socialist collective ownership and distribution according to work are adhered to, and so long as the system encourages the development of production, consolidates the collective

economy, and is one that the masses want, the actual form of the system is not important, and there should be no hasty deciding on one system and turning down of another. The "several fixes and one reward" system of responsibility that we have advocated and promoted since last year on the foundation of specialized division of labor is a form of a system of responsibility for joint production. Experience has shown results to be good, and promotion of this method should be continued. Such a system of responsibility of "several fixes and one reward" with calculation of remuneration for joint production, employing contracts with individual specialized trades in agriculture, forestry, livestock raising, sideline occupations, fisheries, industries, and commerce can serve to team up the superiority advantages of unified administration and cooperation in the division of labor in the collective economy with arousal of the enthusiasm of specialized vocational units, of households with specialized vocations, and of individual commune members. It is a quite good system for the contracting of production. In the contracting for agricultural production, provided the "four unifications" are maintained some fairly large production teams may also individually adapt general methods to specific situations for contracting with teams for production from croplands, with joint output and calculation of rewards or losses to be paid. As for the institution of what is termed, "system of responsibility for joint production," wherein work teams are divided up into "small but complete" units, and which is, in reality, a way of changing the basic accounting unit, we remain opposed.

3. Problems in Contracting With Households for Guaranteed Production

We have already said in the foregoing that we want to actively develop collective production, and that we do not advocate contracting with households for guaranteed production. Though contracting with households for production differs from dividing up the farmland for farming by individual farmers, unless it is done right, it can easily slip into the division of land for individual farming. In an extremely small minority of places where production has not grown for a long period of time, where the peasants' lives are full of hardships, where the collective economy has not operated well, and where contracting with individual households has already taken place, it may be permitted. But the leadership must actively guide and earnestly help these places vigorously develop productivity, and assist them to develop collective production. In many places, experience has demonstrated that all that is needed is for these places to put in a small reservoir and a small hydroelectric power plant, to establish economic crop or livestock bases, and to organize the masses, and then progress can be made from a low level of collectivization to a high level of collectivization. The mainstay of the economies of these areas is still the production team, and there must be adherence to ownership by the production teams of the means of production. Production plans including capital construction, drainage and irrigation, combat against calamities, and the prevention and control of diseases and insect pests must be taken care of in a unified way by production teams, and income within the system of contracting for production must be distributed in a unified way by the production teams. In making distribution, proper care must be taken of families suffering hardship, households enjoying the five guarantees [childless and infirm old persons who are guaranteed food, clothing, medical care, housing, and burial expenses], and families of those who have died in battle.

In order to make fullest utilization of the land and to unearth potential for production, and to increase the income of the collective and of individual commune members, contracting with individual households for production may be permitted for odd bits of scattered land in out of the way places that are not suited to collective

administration. But several principles must be kept in mind. 1) the land area in the collective plan may not be changed; 2) there can be no impairment to water and soil conservation, no damage done to water conservancy facilities, or no damage done to water and land transportation; 3) large tracts of wilderness lands, wilderness mountains, beach areas, and drylands must be operated collectively; 4) tracts on which economic crops like mulberry trees, tea, and fruit are grown may not be touched. The method by which production is contracted may be fixed output (output value), premium payments for excess output, recording of workpoints for the tendering of money or for the tendering of products, or some other method.

4. Problems in the Management of Rural Village Labor Forces

A rational apportionment of tasks and appropriate arrangements must be made for the rural labor force on the basis of actualities in each locale and with consideration for the needs of production in agriculture, forestry, livestock raising, sideline occupations, and fisheries, and in commune and brigade industries. In the past we have criticized the outward flow of labor from farming, going it alone in sideline occupations, forsaking agriculture for commerce, the lack of clear limits, the need for clearly defining limits, and a proper liberalization of policies. We must realize the following two facts: one is that Zhejiang Province has a lot of people and scant land. Most places have surplus labor and an outlet for this surplus labor is a major problem. Second is that a fairly large number of people in the rural villages of Zhejiang Province are not dependent solely on farming for a living. In Dongyang, Yiwu, Yongkang, and Xiantai counties, for example, there are quite a few handicraftsmen and vendors who are engaged in all sorts of handicraft labor and business activities. It must be realized that in many places this is a major source of wealth for the collective economy and that it is a distinct advantage for the rural economy of Zhejiang Province. We must promote its development through leadership and through organization, and open avenues to make the most of this advantage and certainly not restrict it. These people are greenhorns when it comes to farming, but they are experts in their own fields of activity. When they leave farming, not only can they increase the collective and their own individual income, but they are needed by society. Contrarily, if they are restricted from leaving farming and they are forced to farm, society, the collective and the individuals all have no benefit. Consequently, so long as the collective output is not impaired and so long as there is no exploitation of the labor of others, and when permission is given and certification made by communes and brigades, carrying on handicraft labor or engaging in the peddling of odds and ends of the three categories of agricultural sideline products or native products should be allowed. Naturally, conduct inimical to the welfare of the collective or in contravention of national policies and laws, or conduct that disrupts the market must be punished economically and under the law.

One outlet for the rural village labor force is the broadening of avenues of production within agriculture through diversified farming and intensive farming. Another outlet is to permit some of the labor force to leave farming to go into legitimate economic activities. Communes and brigades can organize various kinds of technically proficient people to set up collective specialized units (teams), such as construction, transportation, business, and service units (teams). Those who cannot be readily organized should be allowed to work as individuals. No matter the form, there must be an intensification of management for good handling of the relationship between commune members who leave the team and commune members who remain in the team and do farming. Production brigades should conclude contracts or agreements with commune members who

leave the team and commune members who remain in the team and do farming. Production brigades should conclude contracts or agreements with commune members who leave, stipulating for how long each year they will return to the brigade to engage in agricultural production. The distribution of benefits can be done by the system of paying money on the basis of workpoints, payment of money and distribution of grain, and payment of public accumulation and management dues, putting matters on a collective economic course.

5. Problems in Management of Commune and Brigade Enterprises

Nowadays commune and brigade enterprises in some places lack democratic management, and their relationship with the production teams and the masses becomes more and more distant. Management of the production of the enterprises, payments and disbursements of funds, and distributions of profits are all done as a small number of people direct, and the masses have no say. Furthermore, the management organization imposes management fees and handling fees about which the masses have a lot of complaints. This problem has to be solved. All commune and brigade enterprises should establish and perfect democratic management systems. The important matters of production, financial affairs, and distributions of the enterprises should be discussed and decided by both a commune and brigade management committee, and a meeting of commune member delegates. In the distribution of profits of enterprises, except for retention of sufficient accumulation to expand further production, a portion should be released to production teams for distribution in order to increase the income of the peasants.

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TITLE: "Microclimate Concerning the Behavior of Flowering and the Pollen Spread for Successful Fruiting in Autumn Hybrid Rice"

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TEXT OF ENGLISH ABSTRACT: The relationship among the behavior of flowering, pollen spread in hybrid rice seed fields under autumn conditions and the meteorological conditions has been investigated. It was found that the florescence and time of flowering and pollen production appeared not only in close correlation with the weather conditions and the air temperature, but also with the air humidity. Higher humidity was required for flowering when the temperature was lower, and vice versa. The air temperature and humidity for flowering compensated for each other. A larger angle between the orientation of planting in the seed field and the prevailing wind direction benefited pollination. According to the data observed in the fields for four days, the pollen production spread in the maternal parent line along a south-north orientation is 28 percent higher than that of an east-west orientation.

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